



SERVICE MANUAL

MODEL : LH-W551TB LHS-55TBC, LHS-55TBS, LHS-55TBW, ACC55T, ACC55R

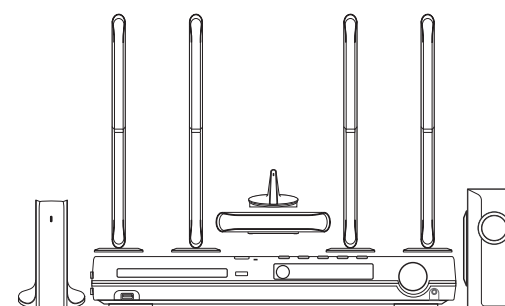
LG Electronics Inc.



# WIRELESS DVD RECEIVER

## SERVICE MANUAL

MODEL : LH-W551TB  
LHS-55TBC, LHS-55TBS,  
LHS-55TBW,  
ACC55T, ACC55R



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# SECTION 1. GENERAL

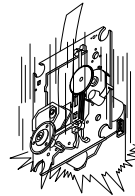
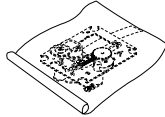
## SERVICING PRECAUTIONS

### NOTES REGARDING HANDLING OF THE PICK-UP

#### 1. Notes for transport and storage

- 1) The pick-up should always be left in its conductive bag until immediately prior to use.
- 2) The pick-up should never be subjected to external pressure or impact.

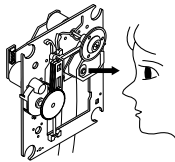
Storage in conductive bag



Drop impact

#### 2. Repair notes

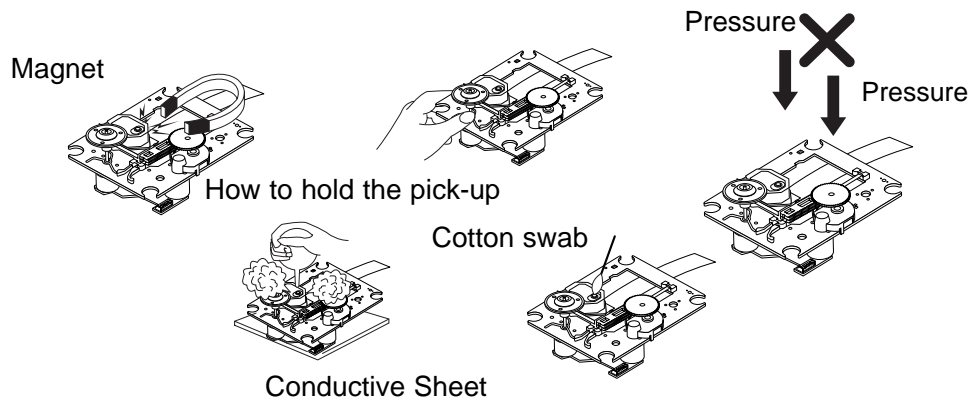
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
- 3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
- 4) Laser beams may damage the eyes!  
Absolutely never permit laser beams to enter the eyes!  
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.



NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

#### 5) Cleaning the lens surface

If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.



#### 6) Never attempt to disassemble the pick-up.

Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

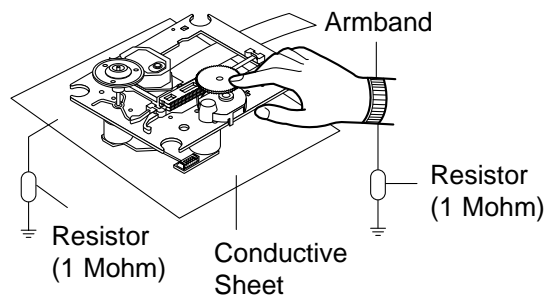
# NOTES REGARDING COMPACT DISC PLAYER REPAIRS

## 1. Preparations

- 1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
- 2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

## 2. Notes for repair

- 1) Before replacing a component part, first disconnect the power supply lead wire from the unit
- 2) All equipment, measuring instruments and tools must be grounded.
- 3) The workbench should be covered with a conductive sheet and grounded.  
When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
- 4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
- 5) Workers should be grounded by an armband (1M  $\Omega$ )
- 6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
- 7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.





# ESD PRECAUTIONS

## Electrostatically Sensitive Devices (ESD)



Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.**

8. Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

## CAUTION. GRAPHIC SYMBOLS

	THE LIGHTNING FLASH WITH APOWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

# SPECIFICATIONS

## GENERAL

Power supply	Refer to main label
Power consumption	Refer to main label
Weight	3.9 kg
External dimensions (W x H x D)	430 x 54 x 350 mm
Operating conditions Temperature:	5°C to 35°C, Operation status: Horizontal
Operating humidity	5% to 85%

## CD/DVD

Laser	Semiconductor laser, wavelength 650 nm
Signal system	PAL 625/50, NTSC 525/60
Frequency response (audio)	200 Hz to 20 kHz
Signal-to-noise ratio (audio)	More than 75 dB (1 kHz, NOP, 20 kHz LPF/A-Filter)
Dynamic range (audio)	More than 70 dB
Harmonic distortion (audio)	0.5 % (1 kHz, at 12W position) (20 kHz LPF/A-Filter)

## VIDEO

Video input	1.0 V (p-p), 75 $\Omega$ , negative sync., RCA jack x 1
Video output	1.0 V (p-p), 75 $\Omega$ , negative sync., RCA jack x 1
S-video output	(Y) 1.0 V (p-p), 75 $\Omega$ , negative sync., Mini DIN 4-pin x 1 (C) 0.3 V (p-p), 75 $\Omega$
Component Video output	(Y) 1.0 V (p-p), 75 $\Omega$ , negative sync., RCA jack x 1 (Pb)/(Pr) 0.7 V (p-p), 75 $\Omega$ , RCA jack x 1

## TUNER

### FM

Tuning Range	87.5 - 108.0 MHz or 65.0 - 74.0 MHz, 87.5 - 108.0 MHz
Intermediate Frequency	10.7 MHz
Signal-to Noise Ratio	60 dB (Mono)
Frequency Response	140 - 10,000 Hz

### AM [MW]

Tuning Range	522 - 1,620 kHz or 520 - 1,720 kHz
Intermediate Frequency	450 kHz

## AMPLIFIER

Stereo mode	70W + 70W (8 $\Omega$ at 1 kHz, THD 10 %)
Surround mode	Front: 70W + 70W (THD 10 %) Center*: 70W Surround*: 70W + 70W (8 $\Omega$ at 1 kHz, THD 10 %) Subwoofer*: 150W (4 $\Omega$ at 30 Hz, THD 10 %)
(* Depending on the sound mode settings and the source, there may be no sound output.)	
Input	AV IN
Outputs	S-VIDEO, MONITOR, PHONES: (32 $\Omega$ , 10.V)

## WIRELESS TX (ACC25T)

Transmission Output : 2.4GHz, Power Supply : DC 7V

## WIRELESS RX (ACC25R)

Reception Output : 2.4GHz, Amplifier : 70W + 70W (8 $\Omega$ , THD 0.1 %)

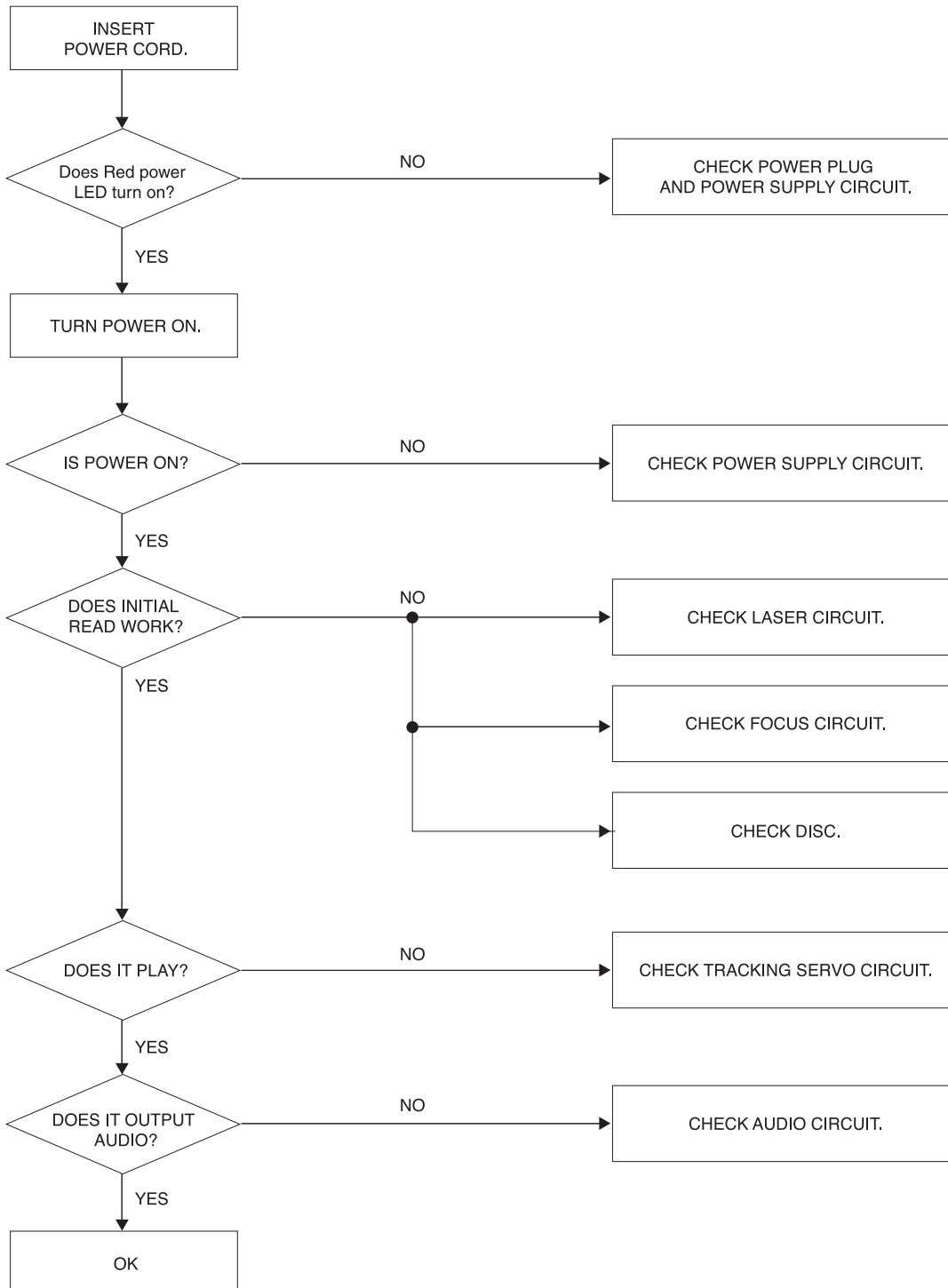
## SPEAKERS

	Front Speaker	Center Speaker	Subwoofer	Wireless Speaker
Type	1 Way 2 Speaker	1 Way 2 Speaker	1 Way 1 Speaker	1 Way 2 Speaker
Impedance	8 $\Omega$	8 $\Omega$	4 $\Omega$	8 $\Omega$
Frequency Response	150 - 20000 Hz	150 - 20000 Hz	40 - 1500 Hz	150 - 20000 Hz
Sound Pressure Level	86 dB/W (1m)	86 dB/W (1m)	82 dB/W (1m)	86 dB/W (1m)
Rated Input Power	70W	70W	150W	70W
Max. Input Power	140W	140W	300W	140W
Net Dimensions	280x1200x280 mm	500x83x90 mm	195x402x360 mm	280x1200x280 mm
Net Weight	2.38 kg	0.71 kg	6.2 kg	2.38 kg

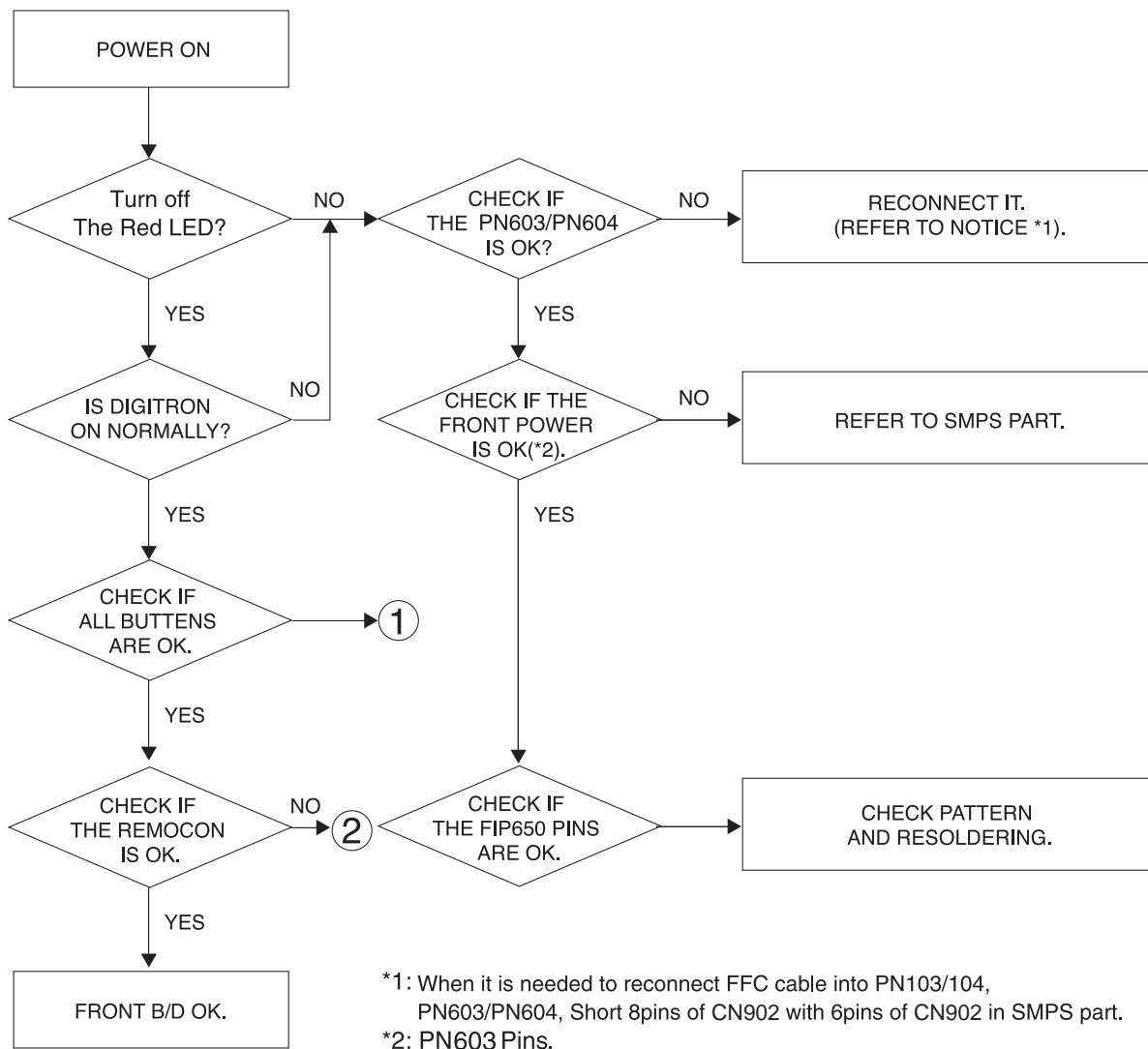
# SECTION 2. AUDIO PART

## AUDIO TROUBLESHOOTING GUIDE

### 1. POWER SUPPLY CIRCUIT



## 2. FRONT CIRCUIT (1/2)

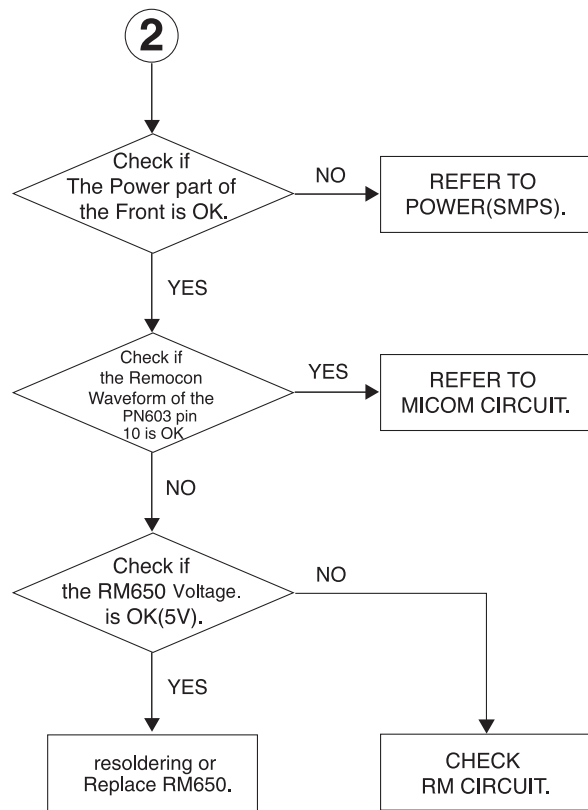
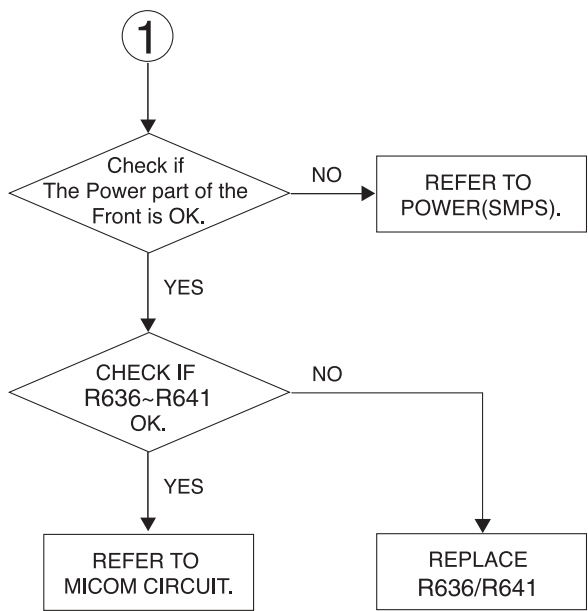


\*1: When it is needed to reconnect FFC cable into PN103/104, PN603/PN604, Short 8pins of CN902 with 6pins of CN902 in SMPS part.

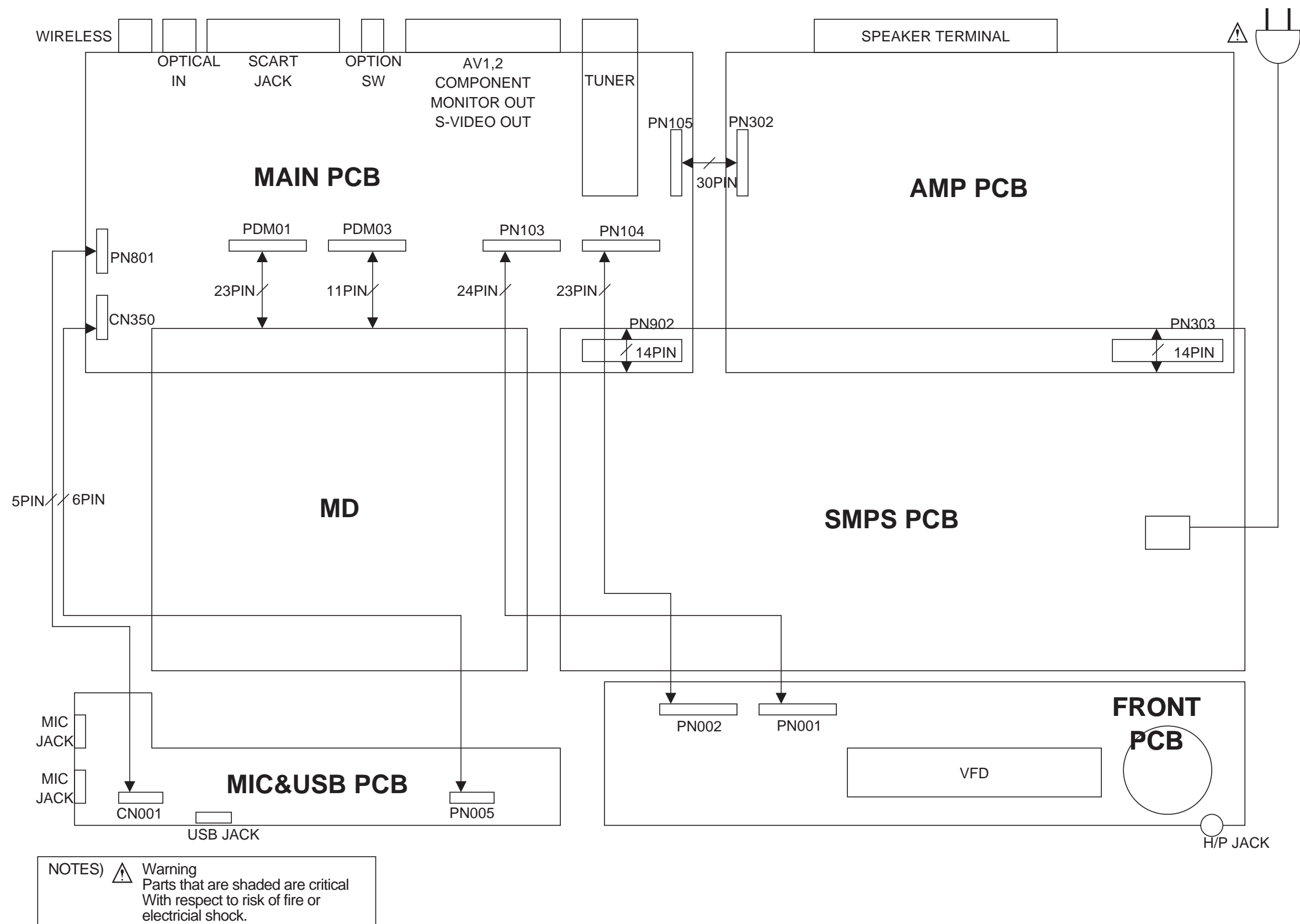
\*2: PN603 Pins.

PIN1 : -32.4 VKK  
PIN3 : -27.5 FL-  
PIN4 : -23.7 FL+  
PIN9 : +5.0

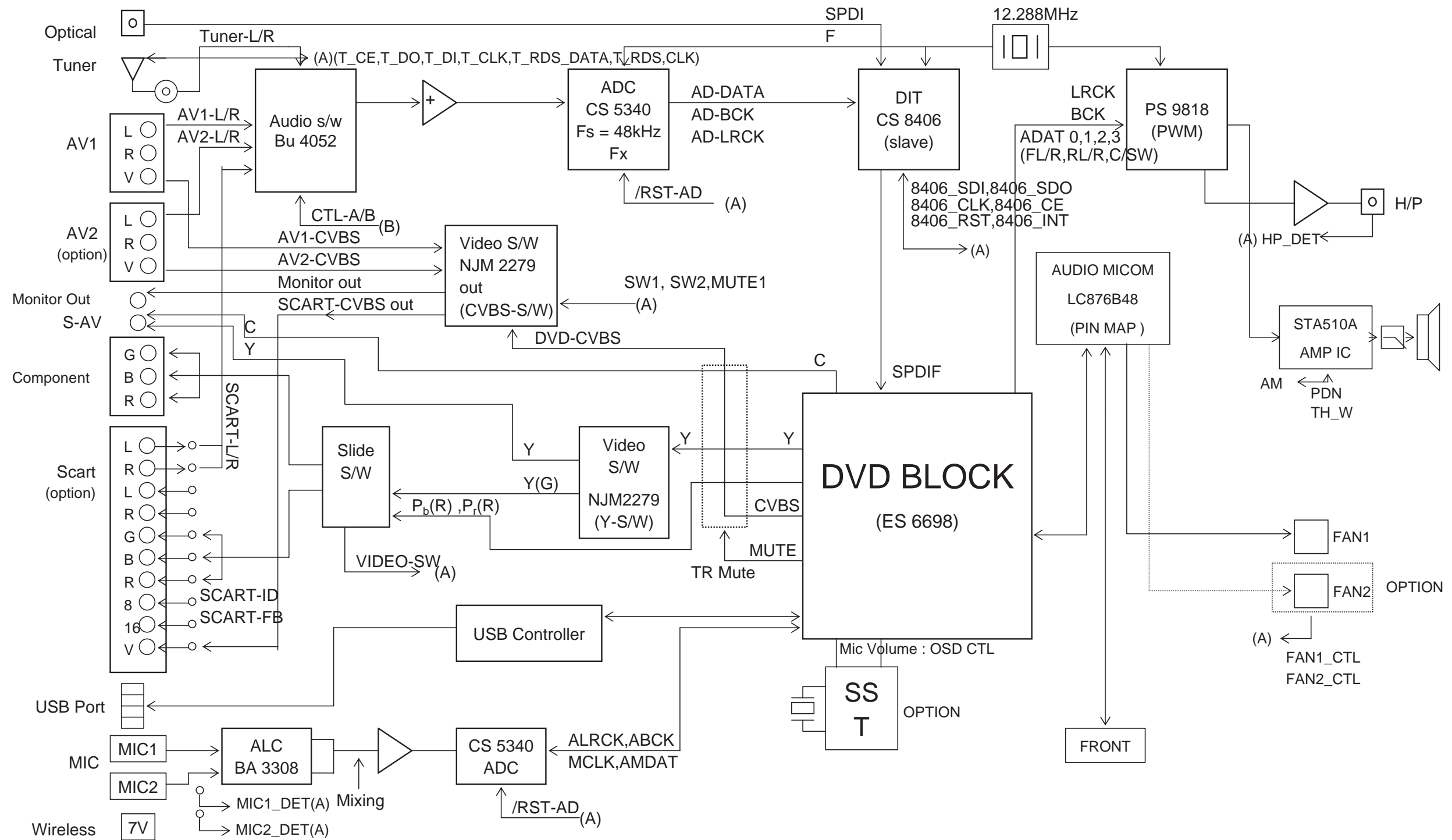
### 3. FRONT CIRCUIT (2/2)



WIRING DIAGRAM



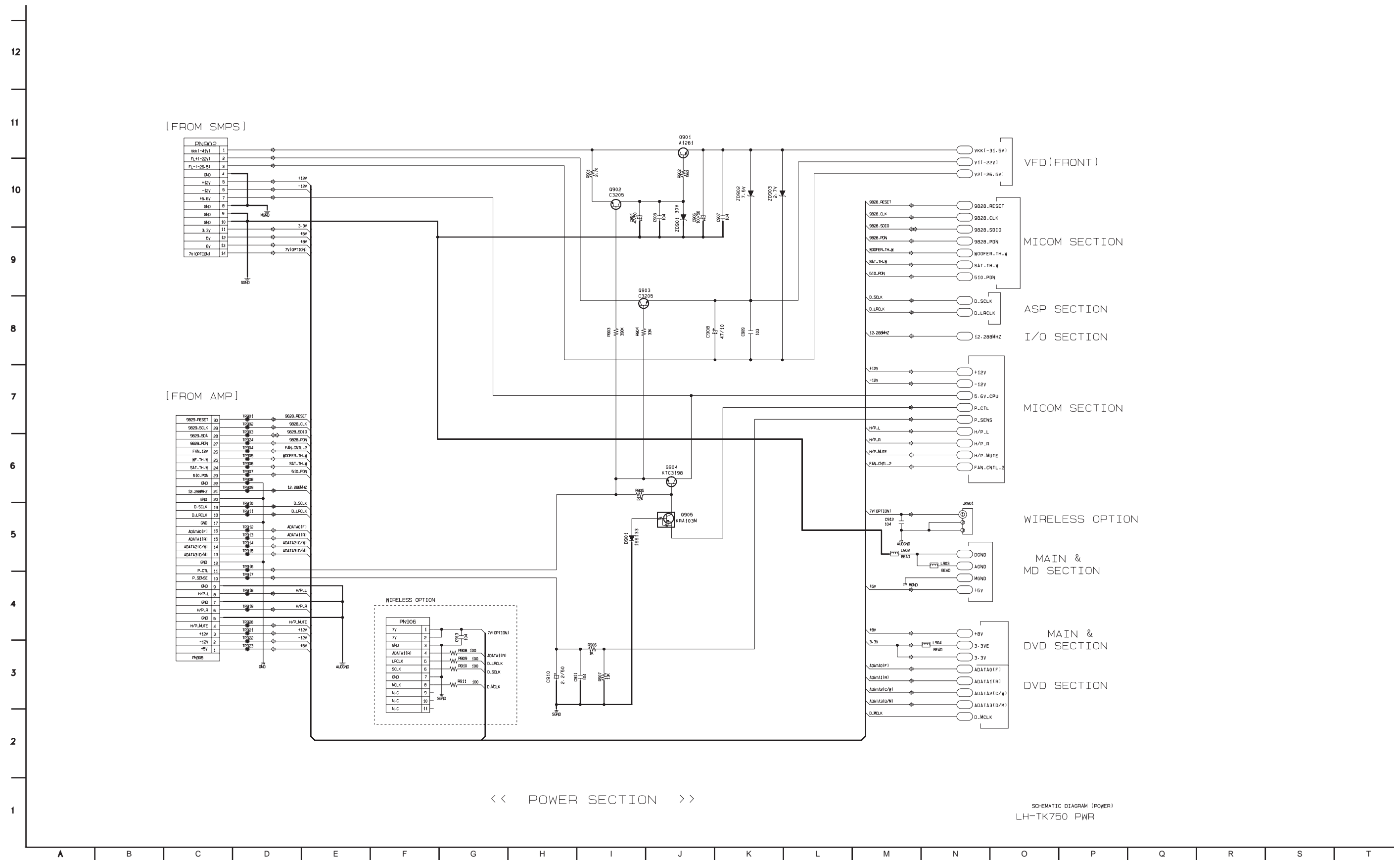
## BLOCK DIAGRAM







## 2. POWER SCHEMATIC DIAGRAM\_2



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<< MICOM SECTION >>

(OPTION TABLE)

SIMBOL	CONTENTS	TABLE	
		1	0
D008	XCLASS/XTS	XCLASS/XTS	NON-XCLASS
D009	DVD MODULE	WTK	ESS
D010	DIGITAL_AUX	DIR(CS42816)	DIR(CS8406)
D011	D012	OUTPUT POWER	1 1 TK750 1 0 TK250 0 1 TK550 0 0 T250
D013	D014	SPK OPTION	1 1 WIRELESS 1 0 HALF TALL 0 1 TALL BOY 0 0 SAT
D015	USB	USB	NON USB
D016	***		

TU101  
ONE BOARD TUNER

<< I/O SECTION >>

<MAIN\_MIC\_SECTION>

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<DVD SECTION>

<POWER SECTION>

IC101  
TOSHIBA\_MICOM

IC103  
A1267

IC104  
74VHC244

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A1267

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KRC103M

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KRC103M

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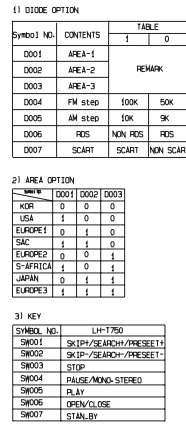
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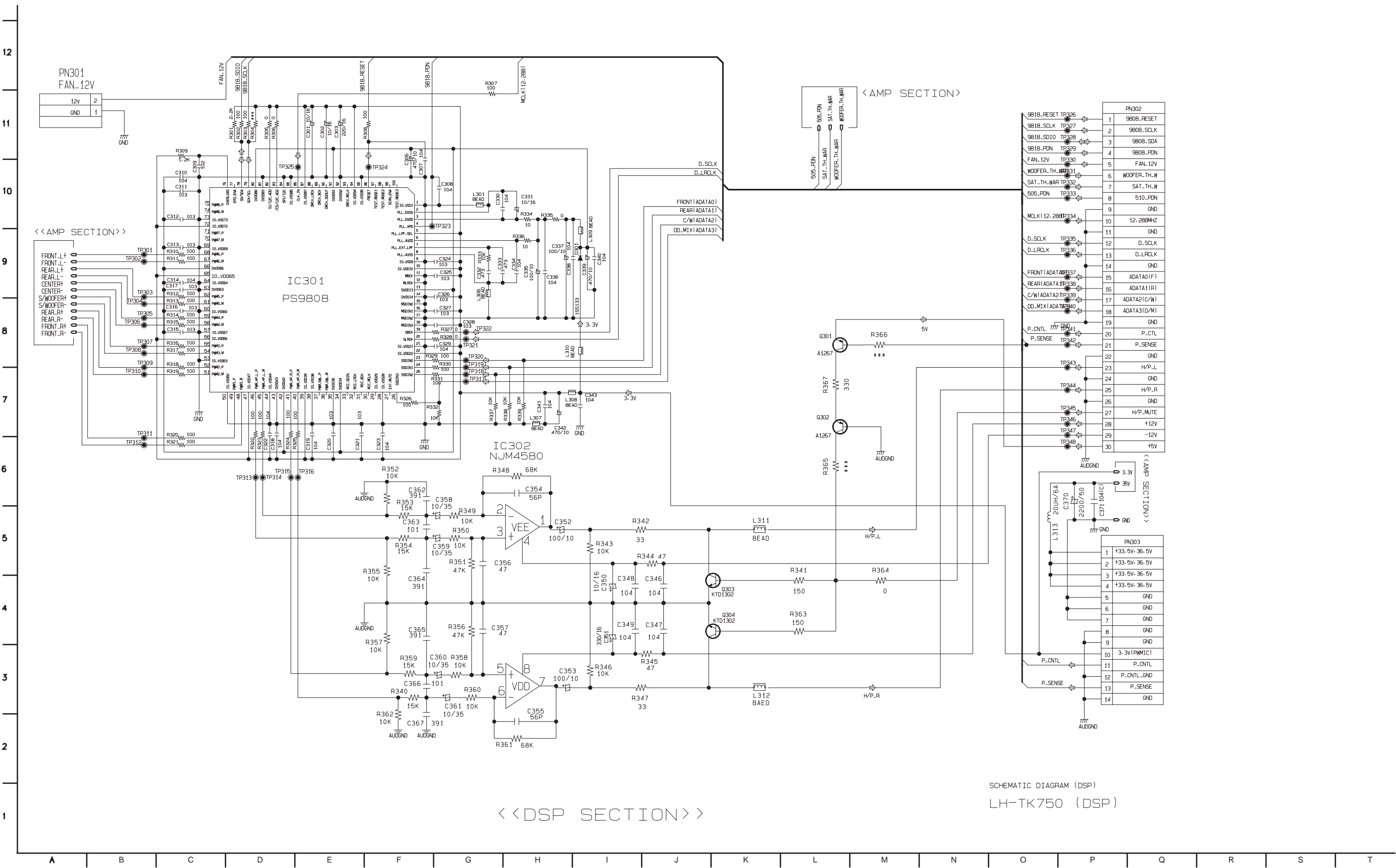
IC324

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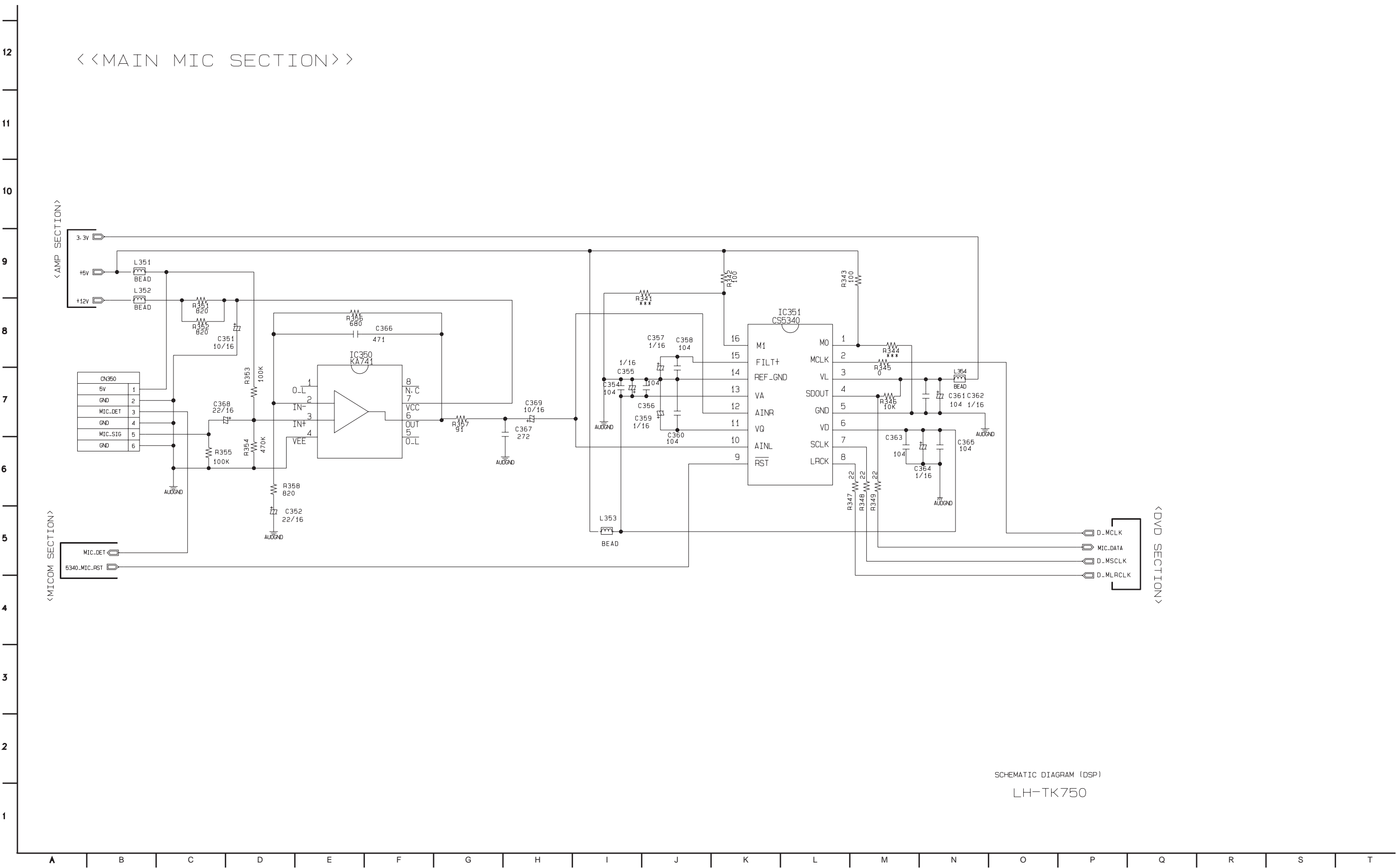
2-14 2-15

5. DSP&AMP SCHEMATIC DIAGRAM





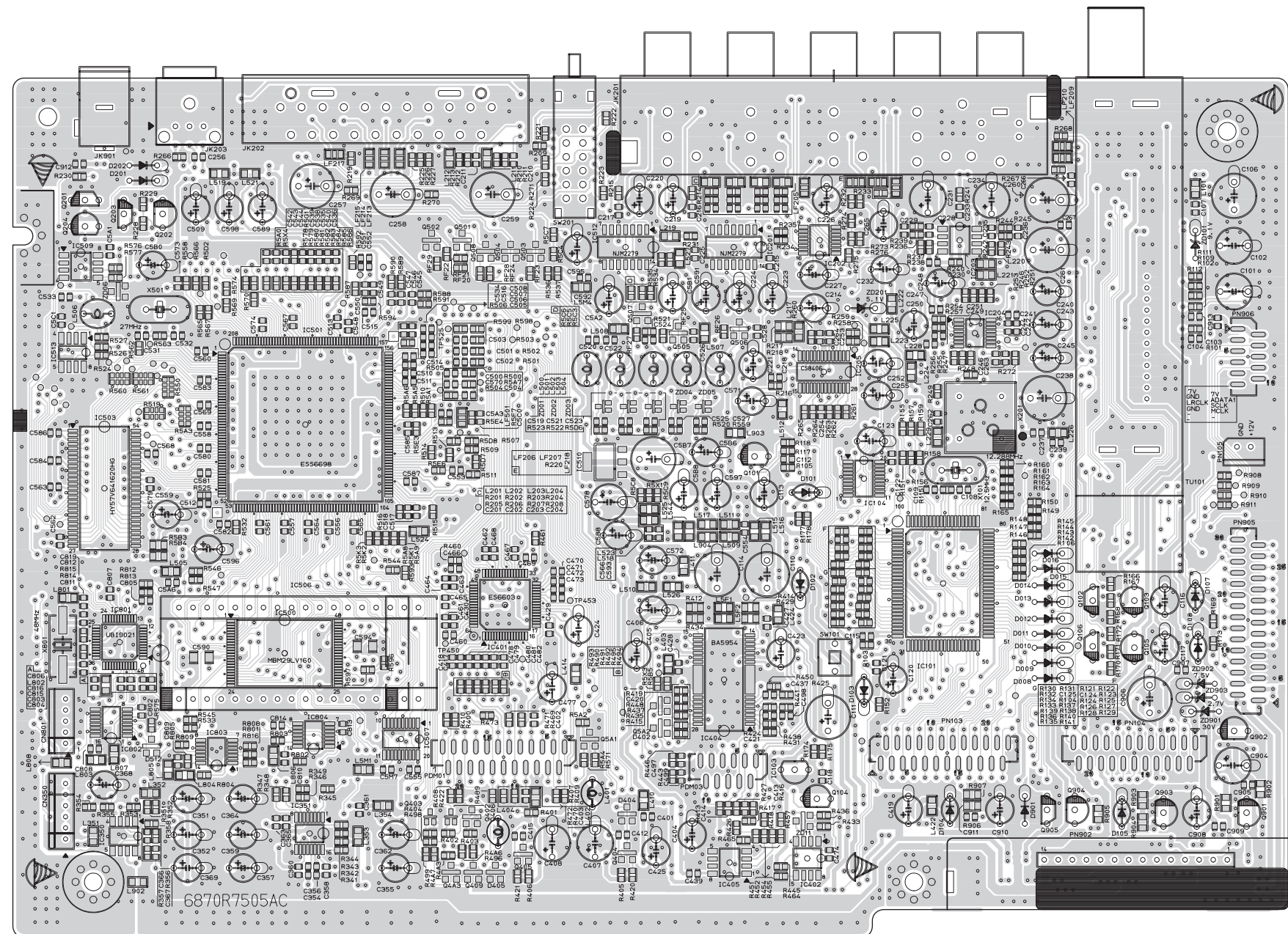
7. MAIN MIC SCHEMATIC DIAGRAM



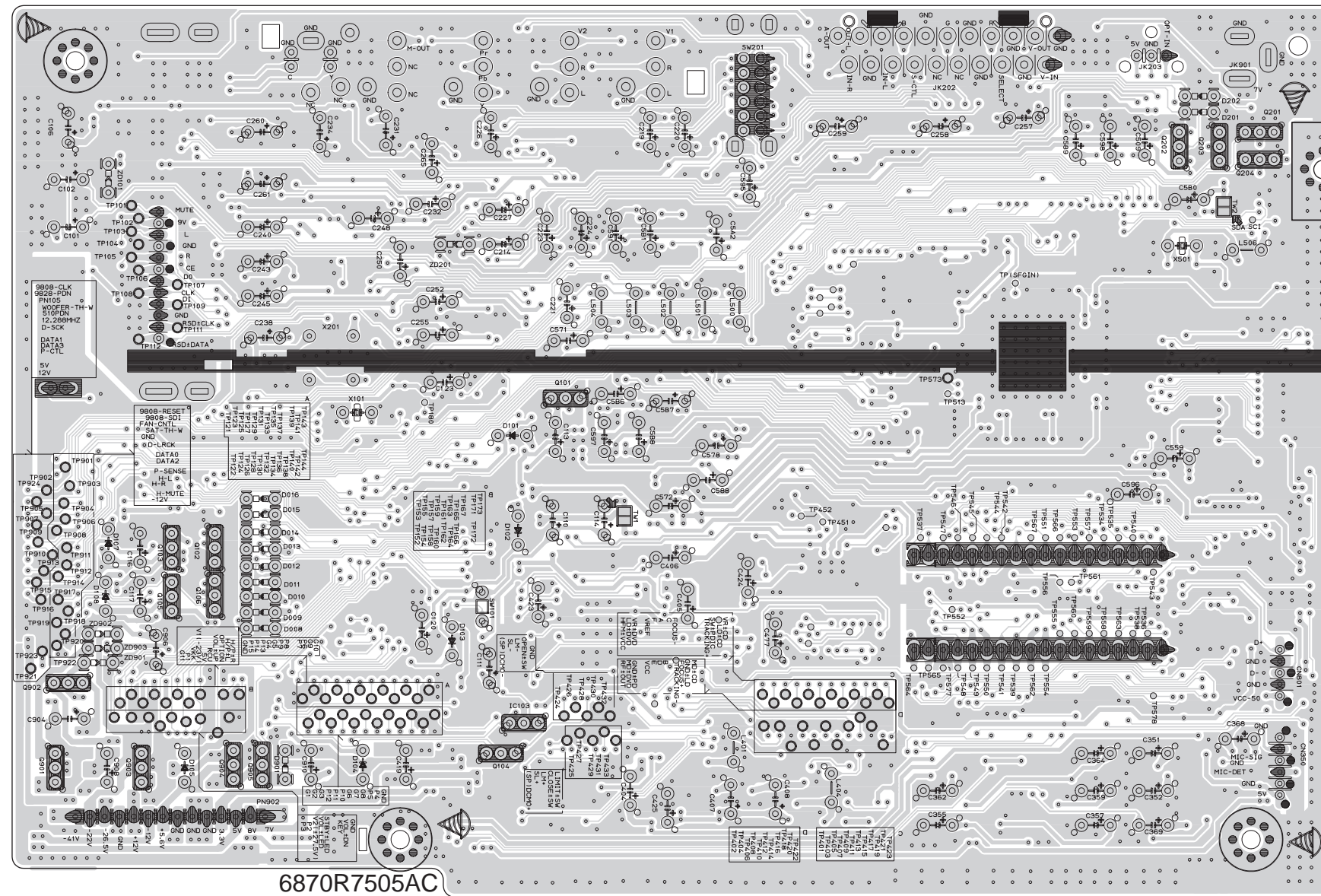
SCHEMATIC DIAGRAM (DSP)  
LH-TK750



## 1. MAIN/DVD P.C. BOARD DIAGRAM ( TOP VIEW )

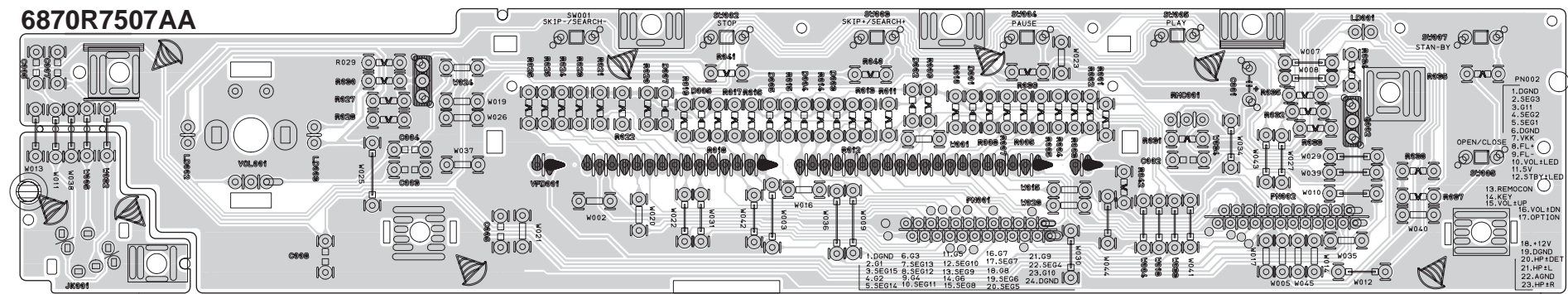


## 2. MAIN/DVD P.C. BOARD DIAGRAM ( BOTTOM VIEW )

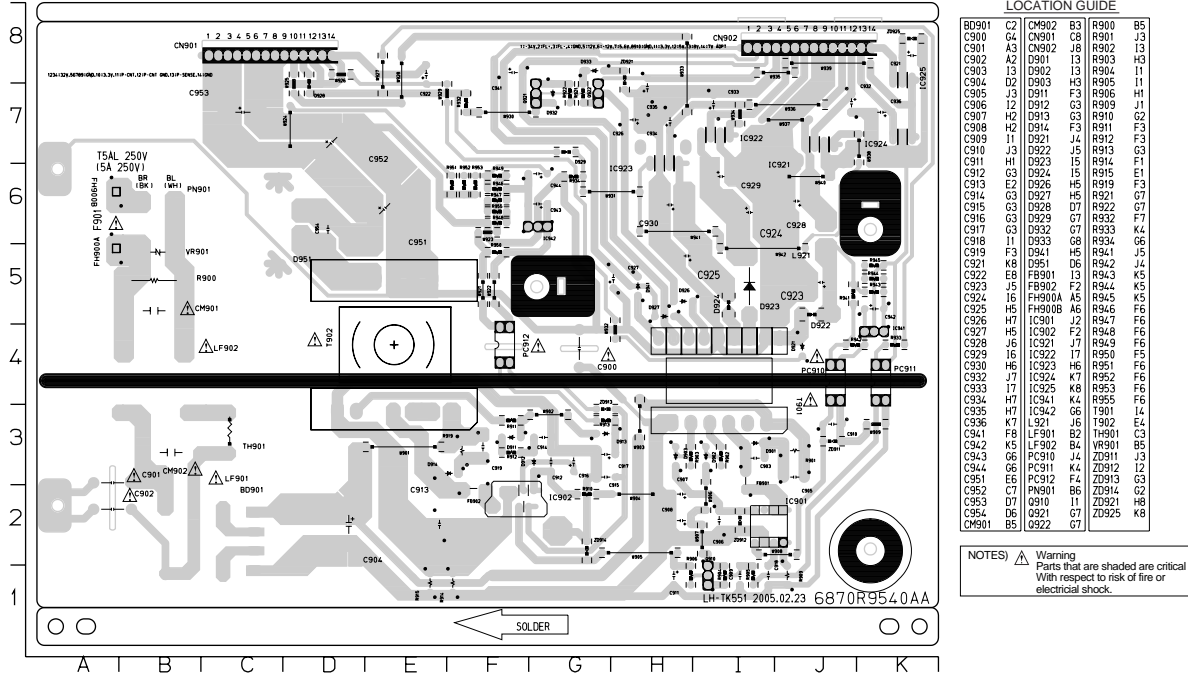




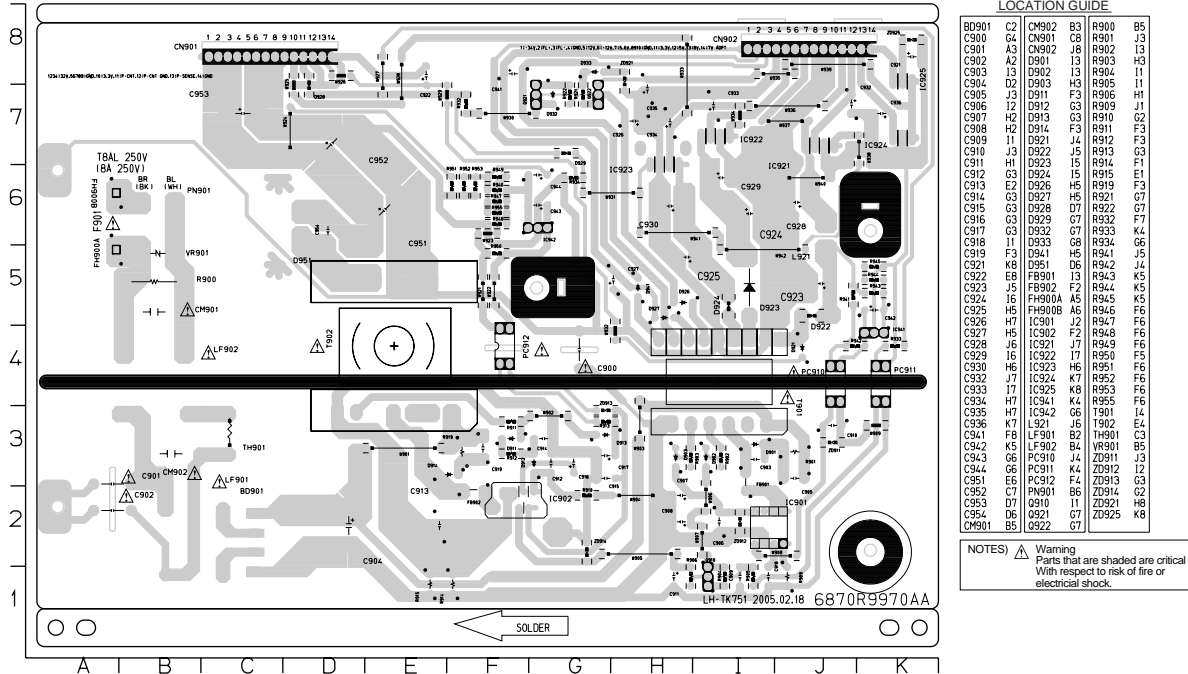
### 3. FRONT MIC P.C. BOARD



#### 4. SMPS P.C. BOARD ( 5 TOOL )

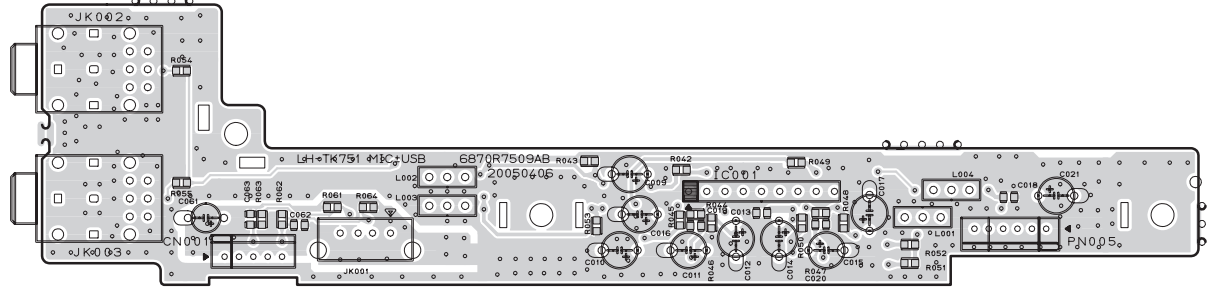


( 7 TOOL )

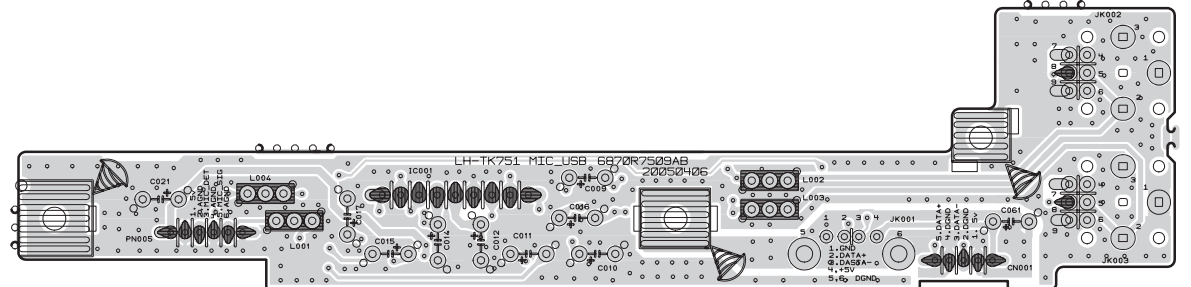


## 5. MIC P.C. BOARD

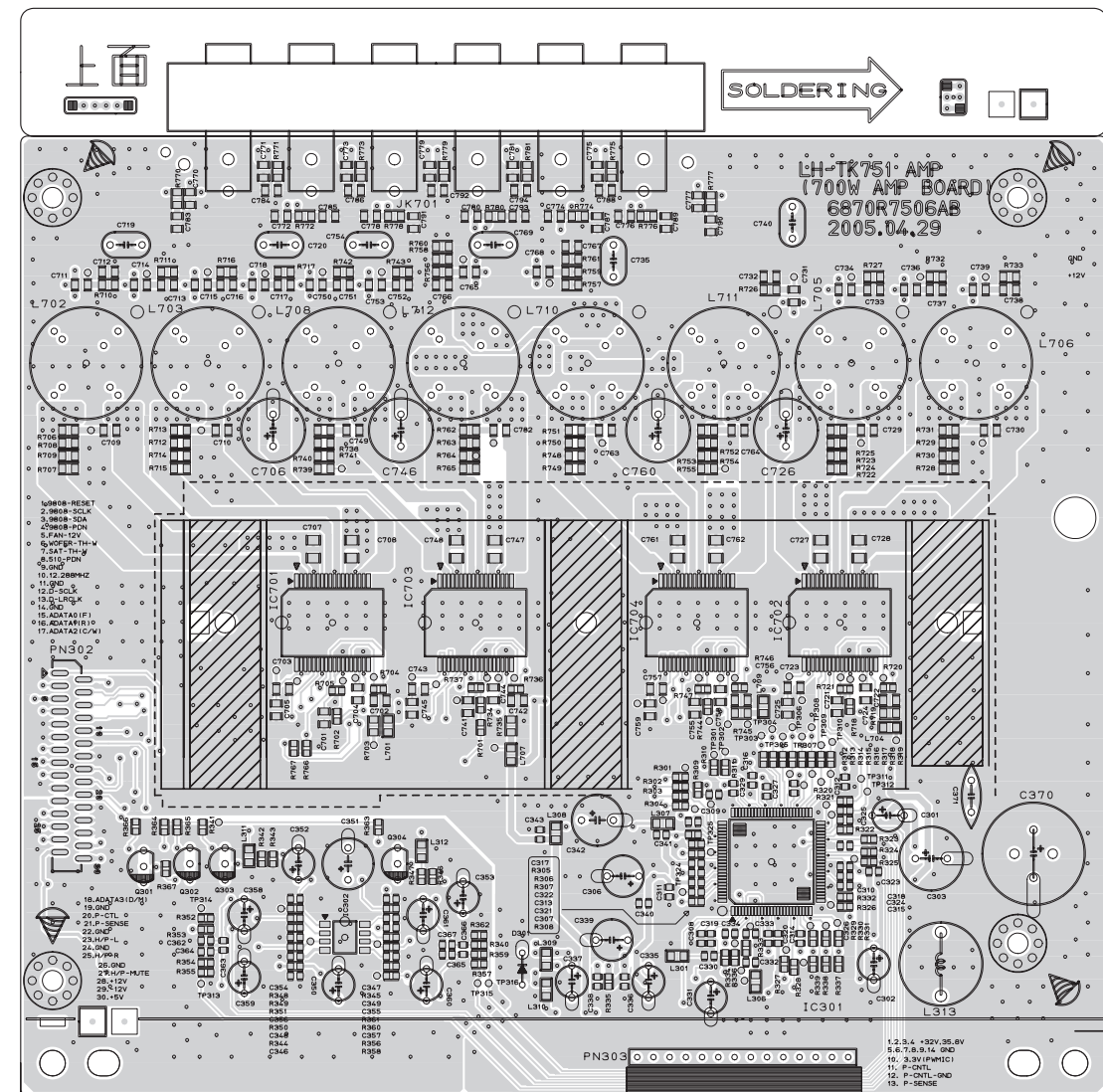
( TOP VIEW )



( BOTTOM VIEW )



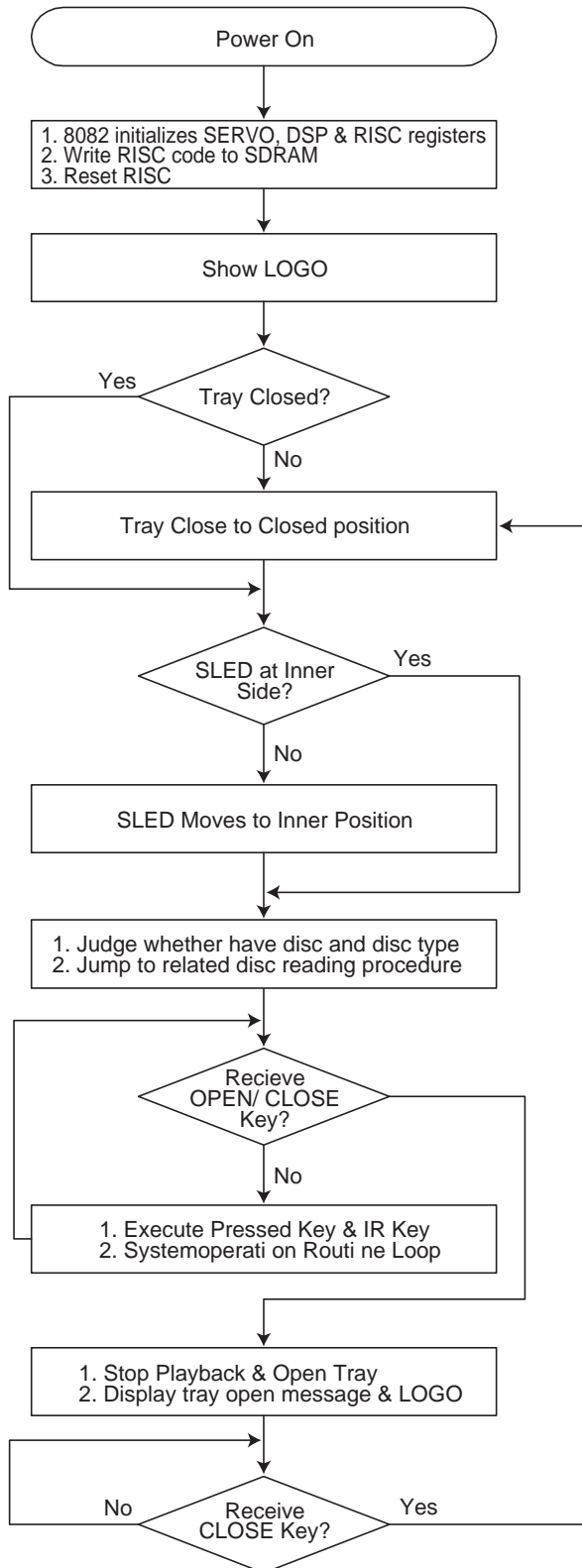
( TOP VIEW )



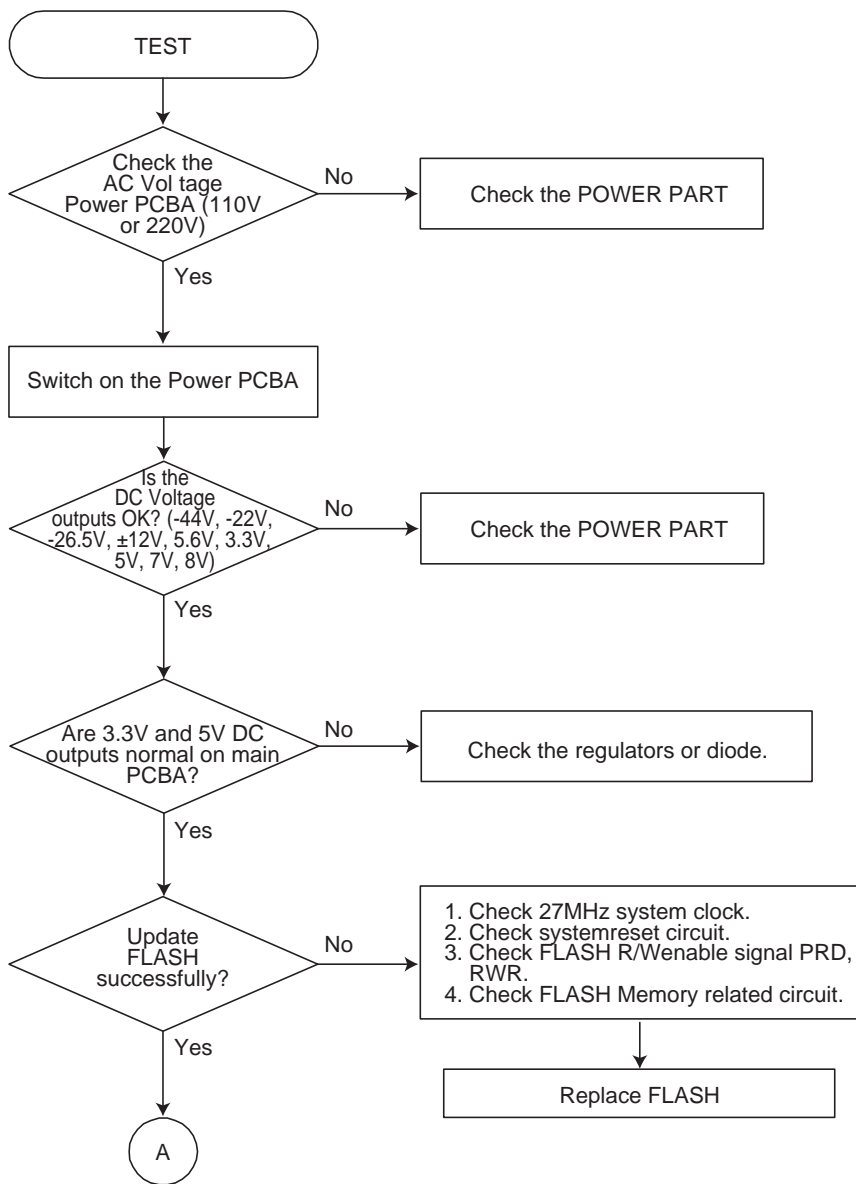
# SECTION 3. DVD & AMP PART

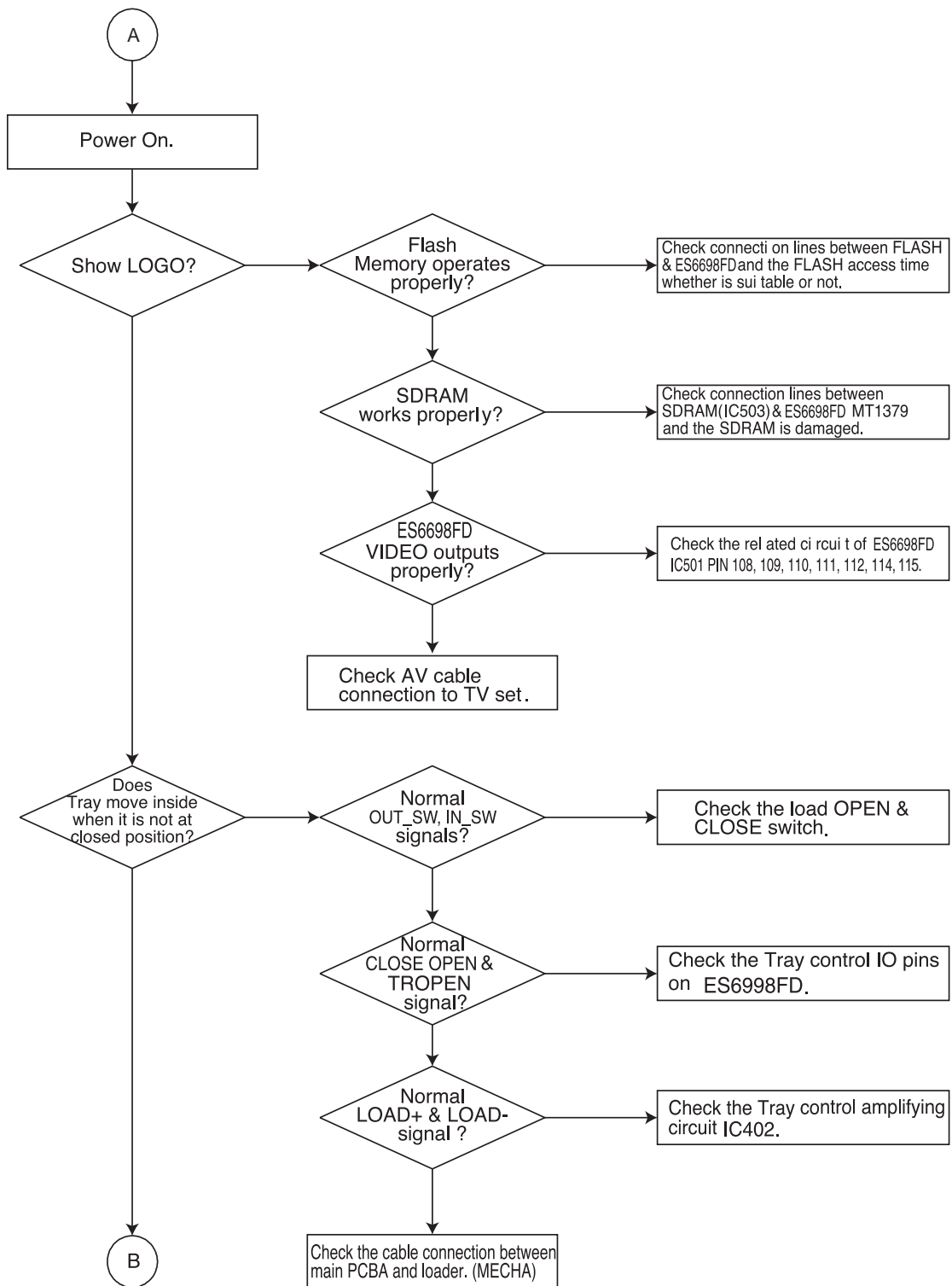
## ELECTRICAL TROUBLESHOOTING GUIDE

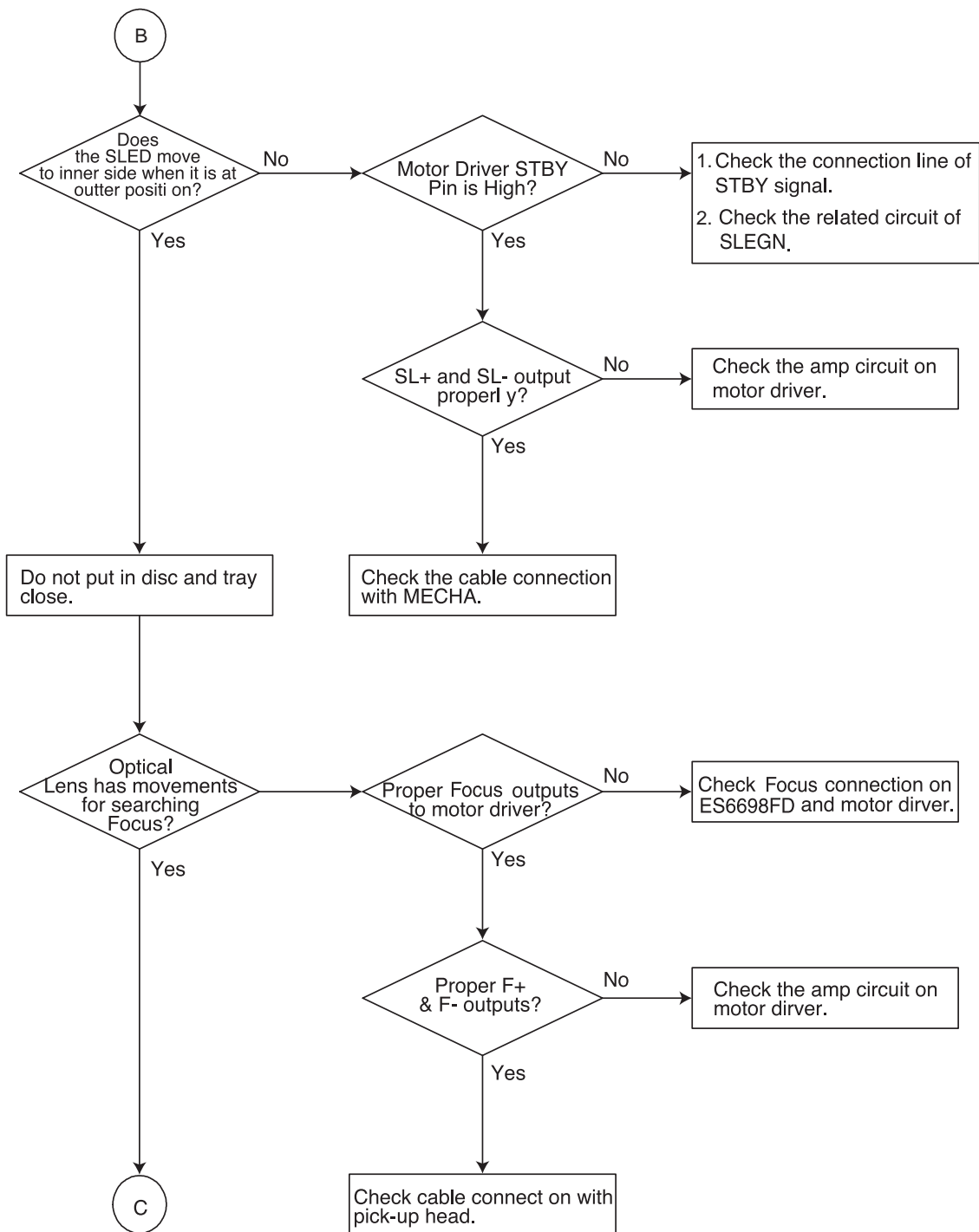
### 1. System operation flow



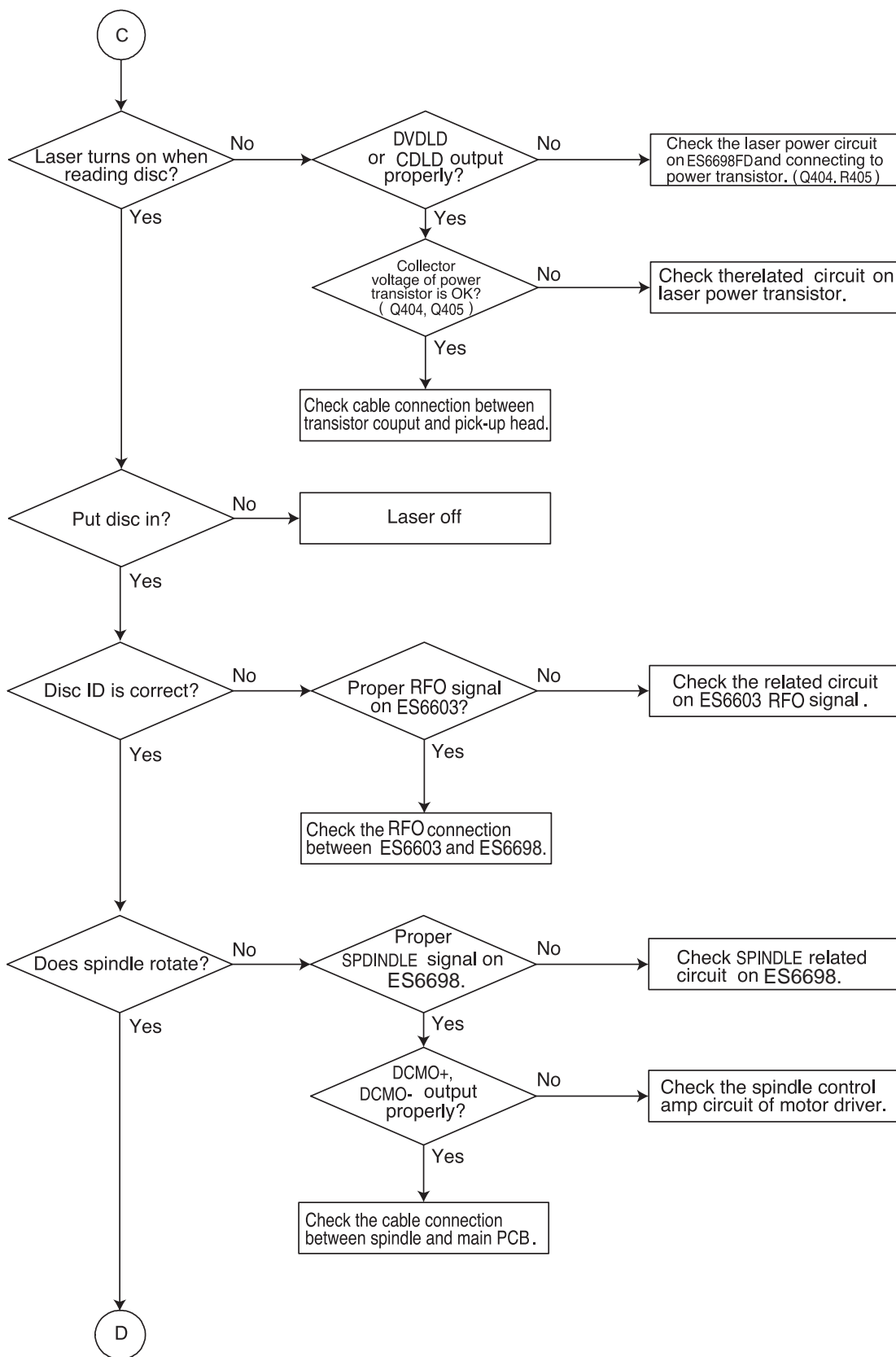
## 2. Test & debug flow



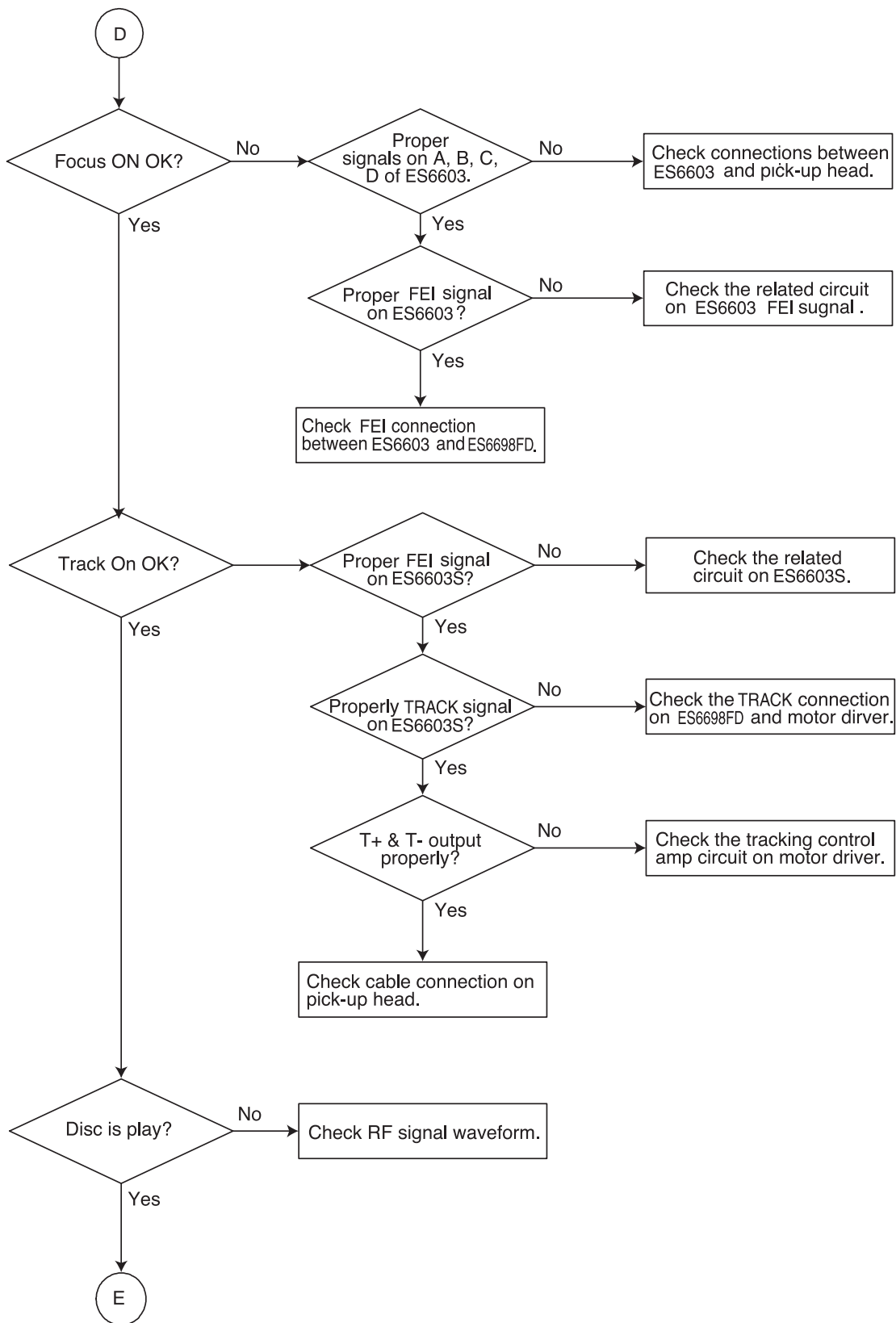


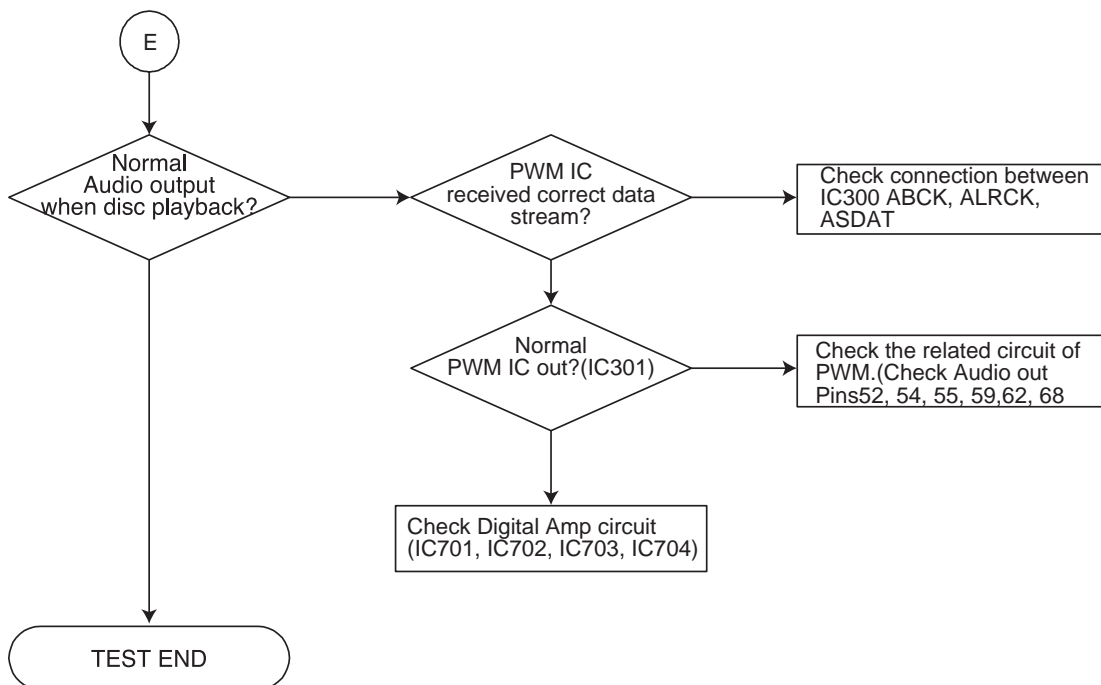




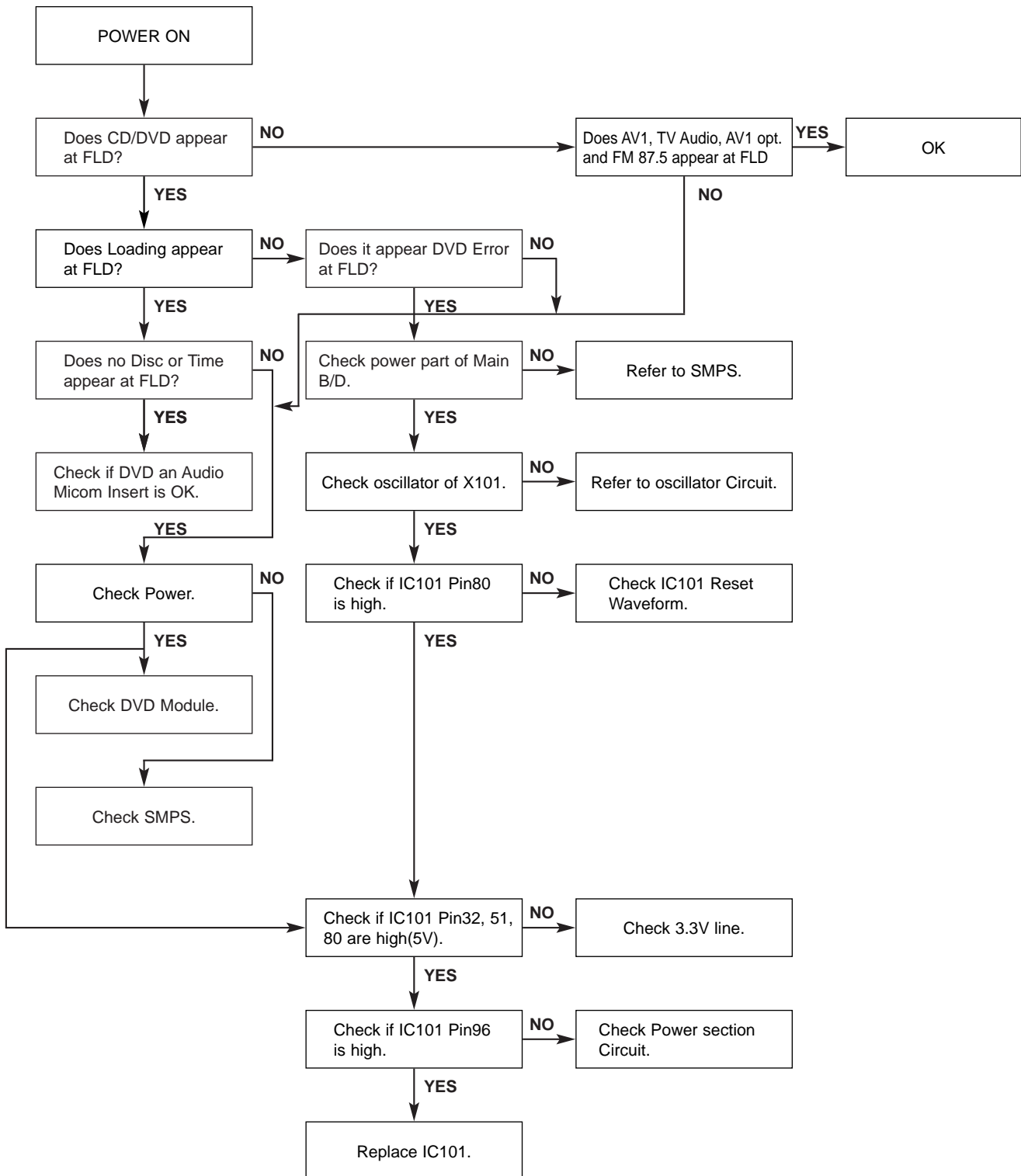








### 3. AUDIO $\mu$ -COM Circuit(DVD & AMP)



# DETAILS AND WAVEFORMS ON SYSTEM TEST AND DEBUGGING

## 1. SYSTEM 27MHz CLOCK,RESET,FLASH R/W SIGNAL

### 1) ES6698FD main clock is at 27MHz(X501)

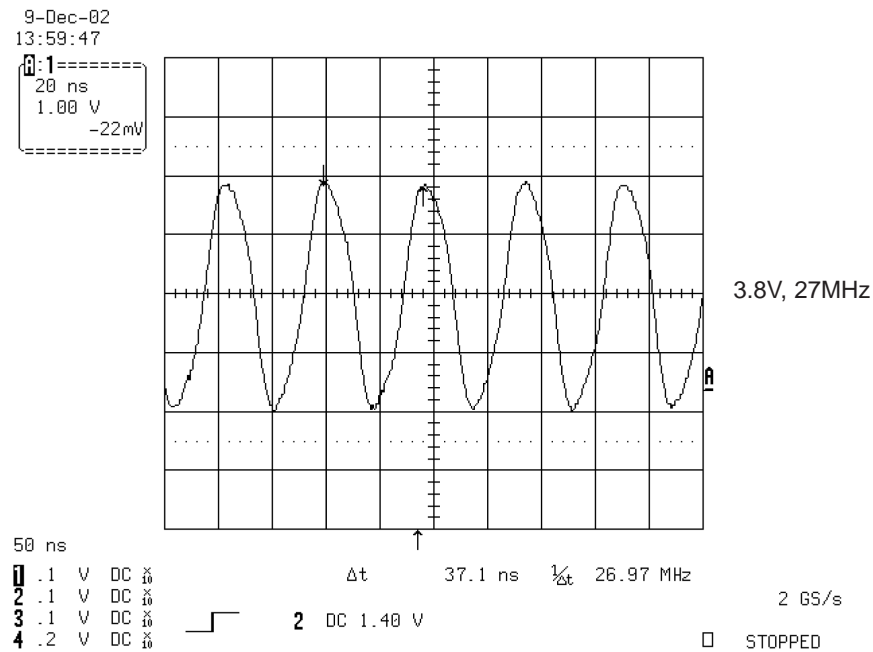


FIG 1-1

### 2) ES6698FD reset is high active.

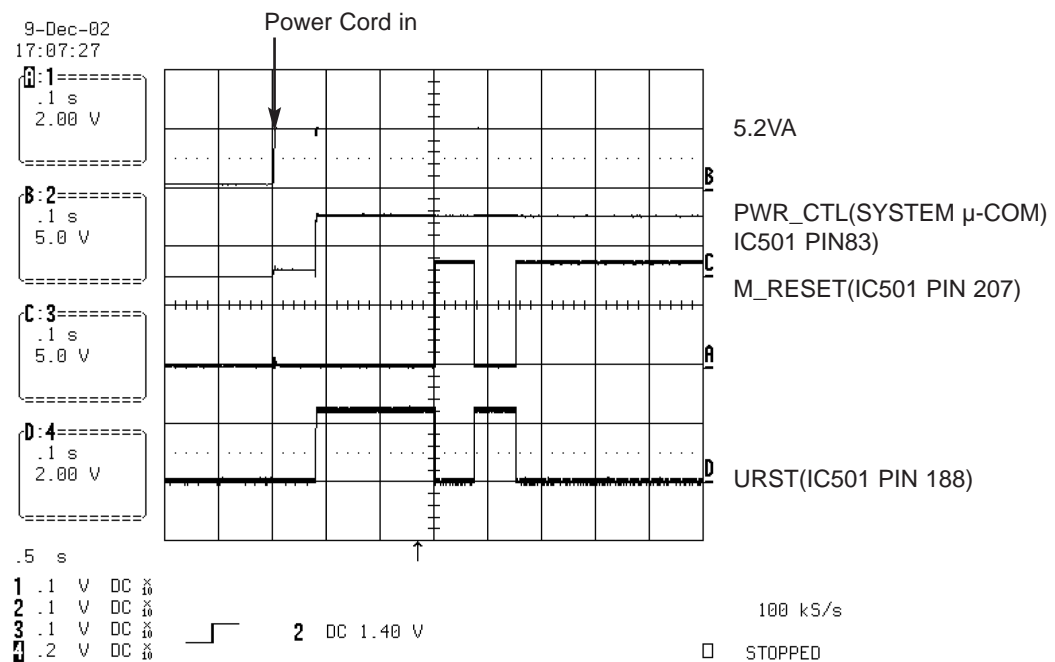


FIG 1-2

### 3) Flash R/W enable signal during download(Downloading)

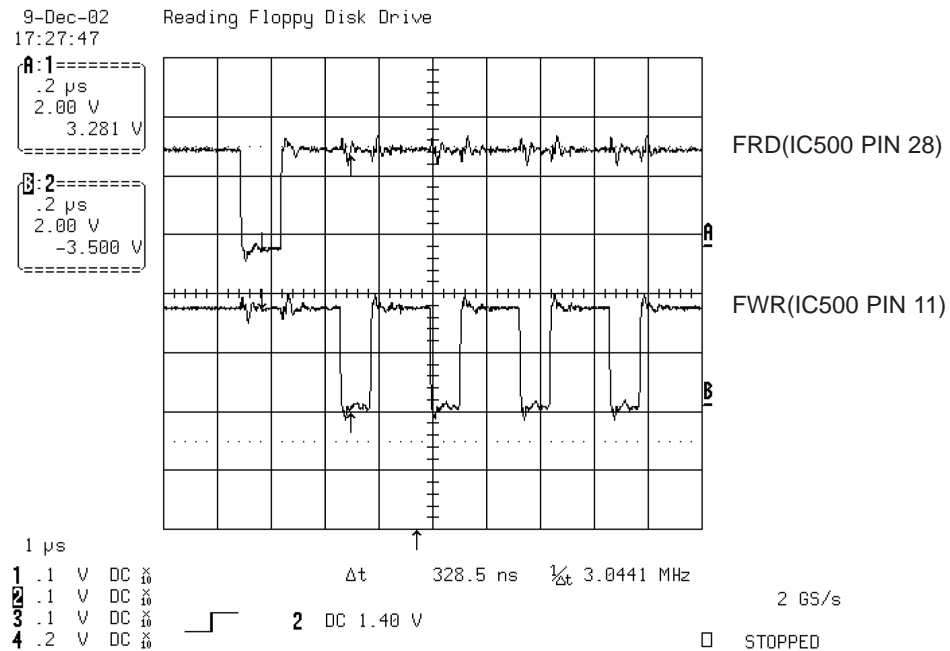


FIG 1-4

## 2. SDRAM CLOCK

### 1) ES6698FD main clock is at 27MHz(X501)

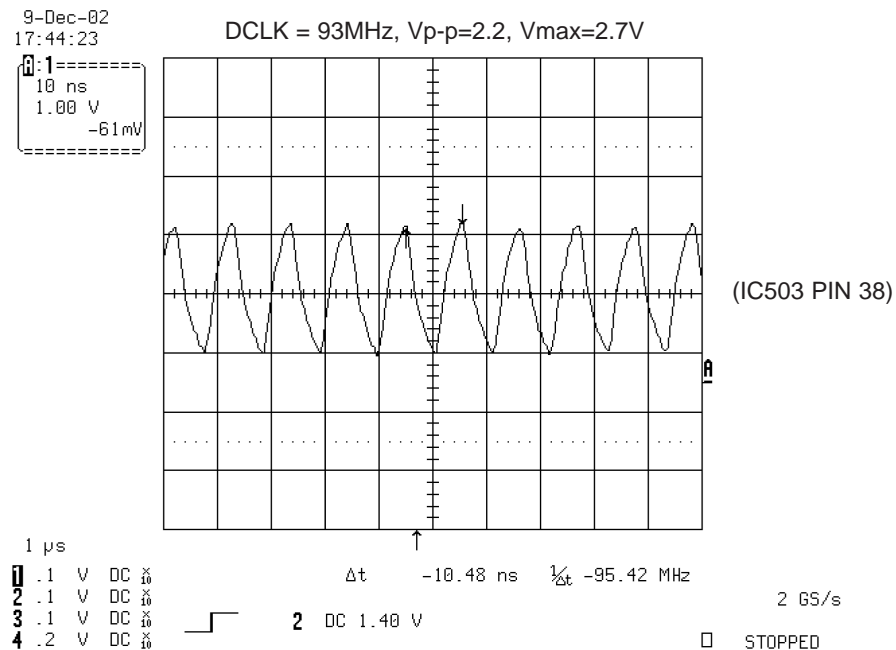


FIG 2-1

### 3. TRAY OPEN/CLOSE SIGNAL

#### 1) Tray open/close waveform

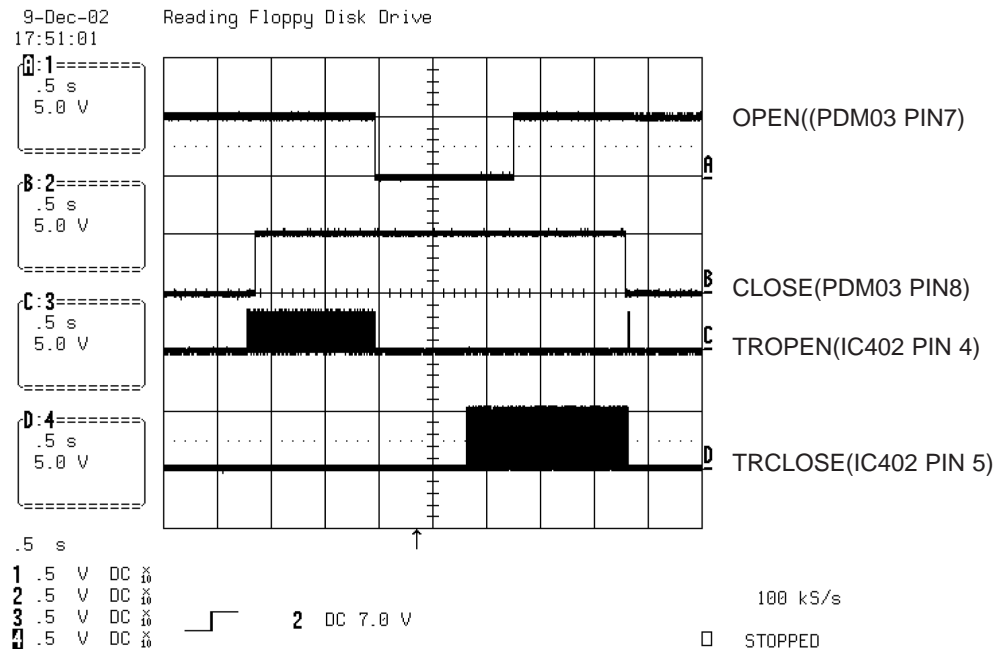


FIG 3-1

#### 2) Tray close waveform

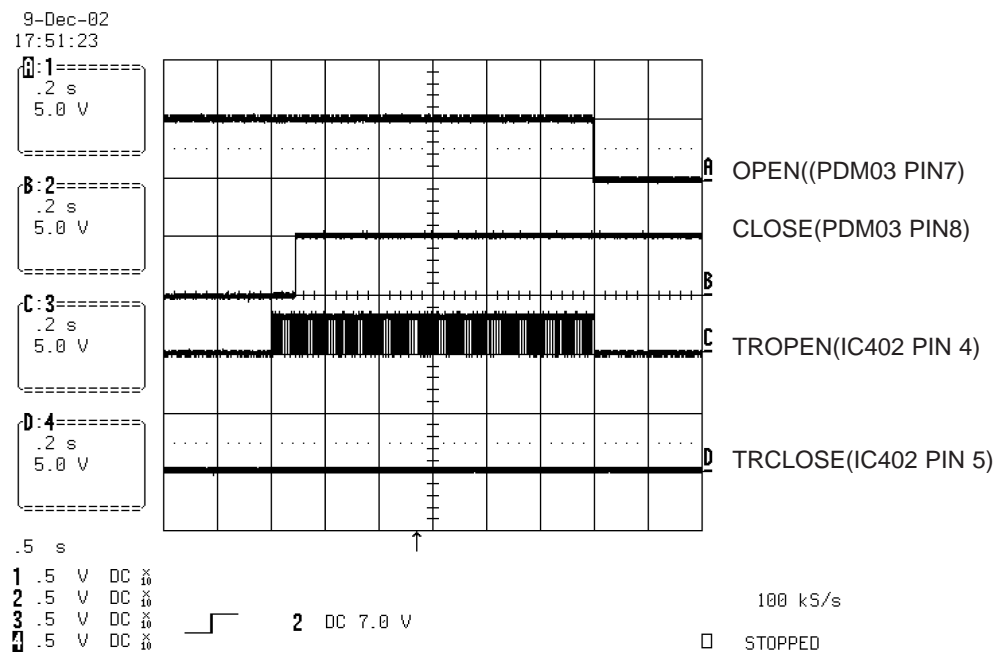


FIG 3-2

### 3) Tray open waveform

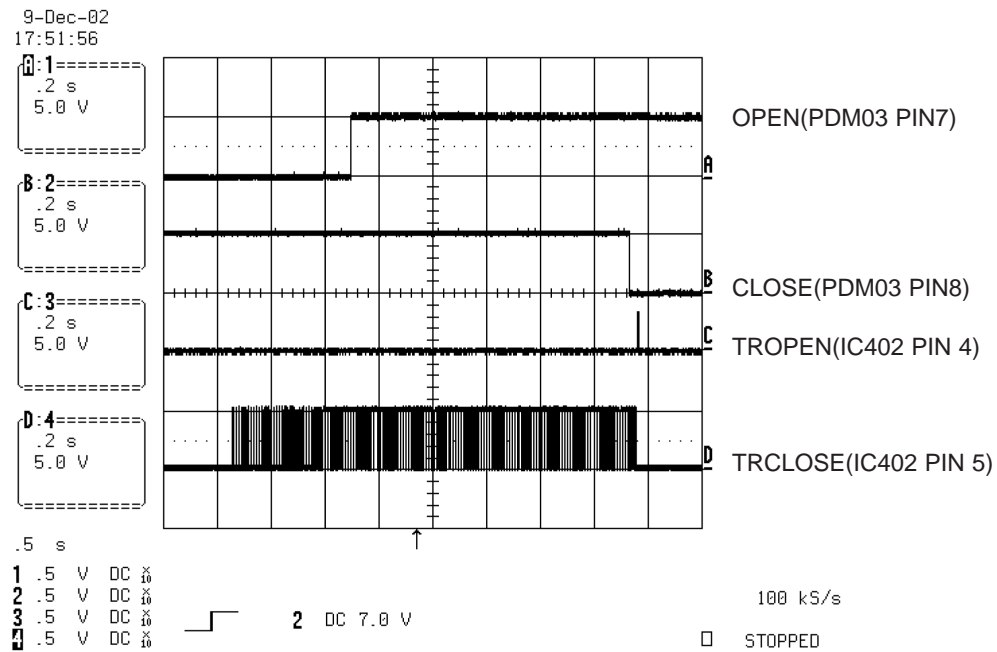


FIG 3-3

### 4. SLED CONTROL RELATED SIGNAL (NO DISC CONDITION)

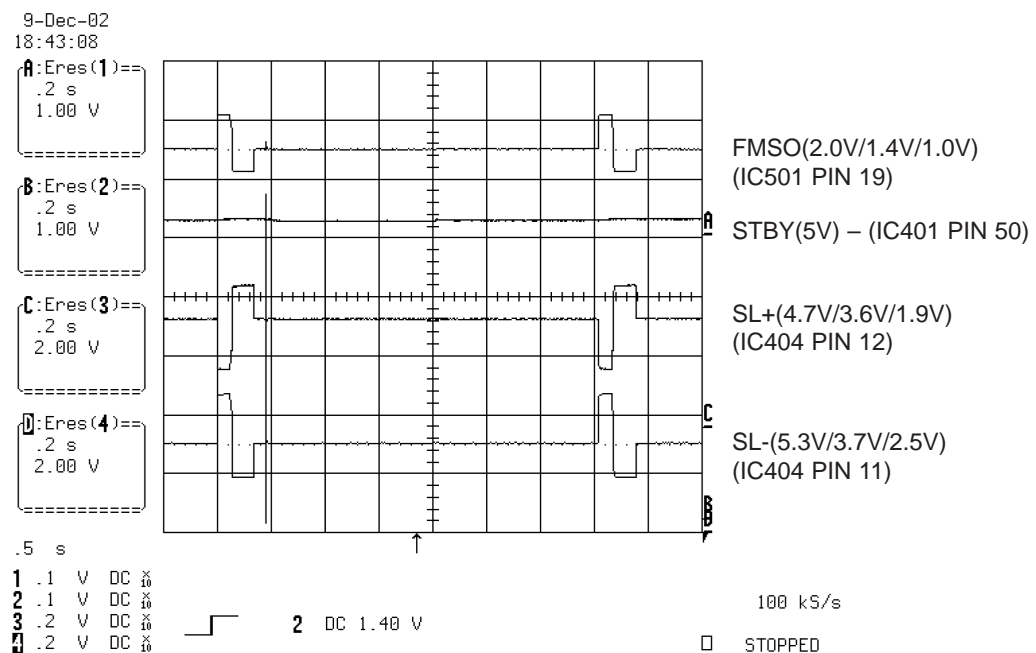


FIG 4-1

## 5. LENS CONTROL RELATED SIGNAL(NO DISC CONDITION)

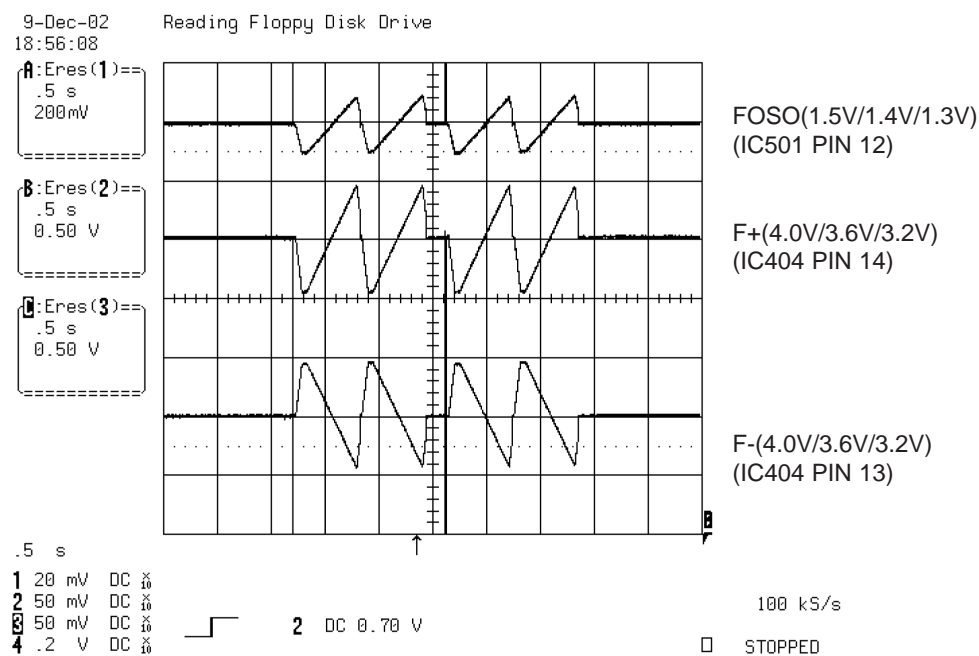


FIG 5-1

## 6. LASER POWER CONTROL RELATED SIGNAL(NO DISC CONDITION)

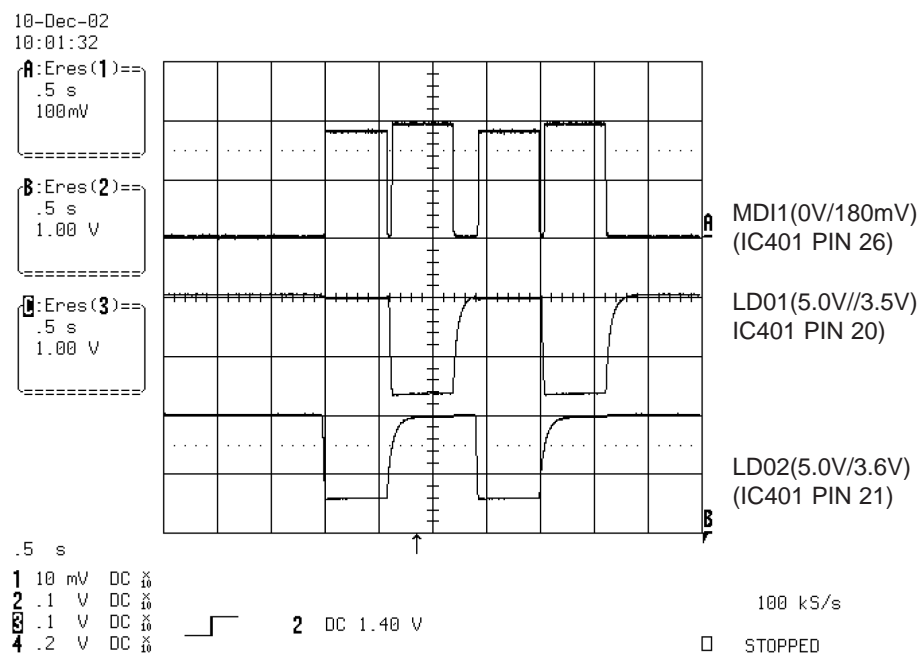


FIG 6-1



## 7. DISC TYPE JUDGEMENT WAVEFORMS

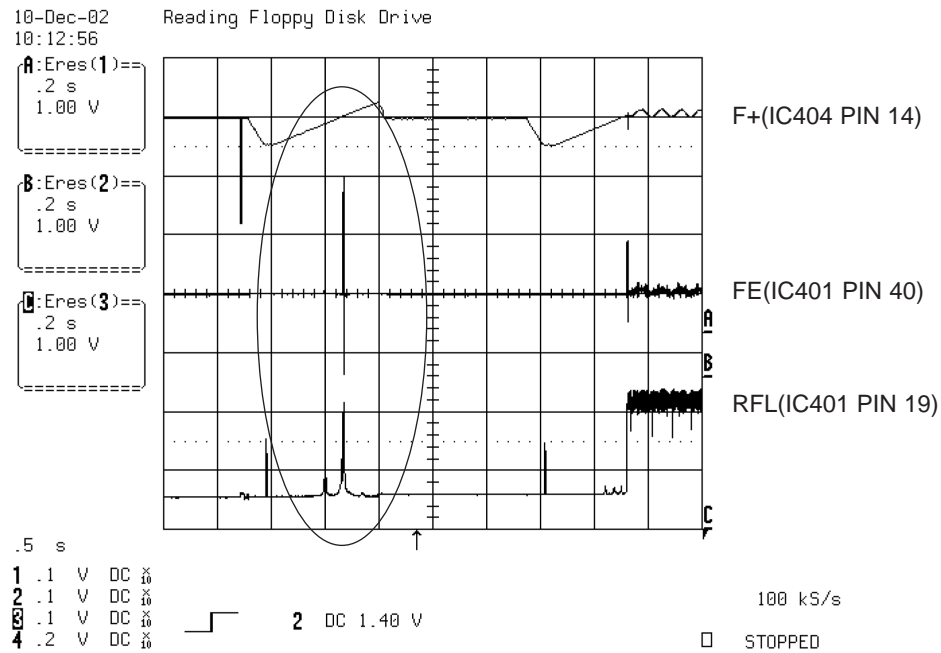


FIG 7-1 (DVD)

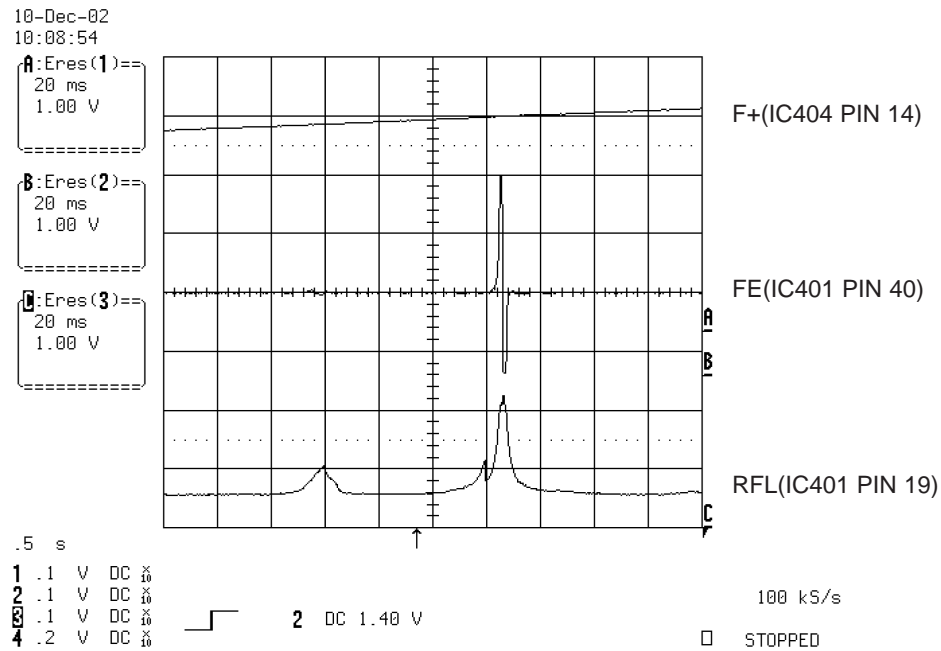


FIG 7-2 (DVD)

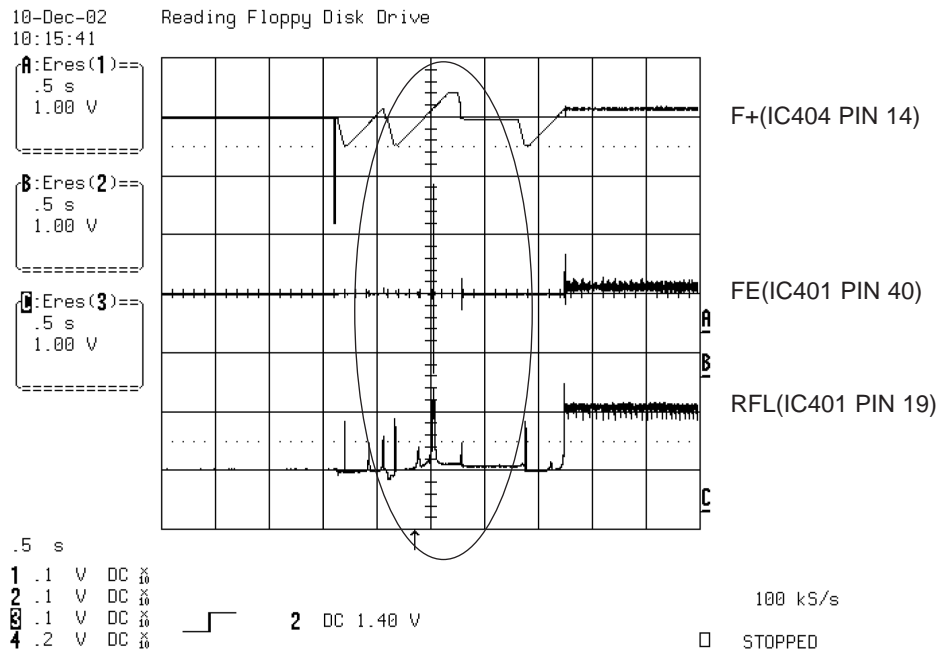


FIG 7-3 (CD)

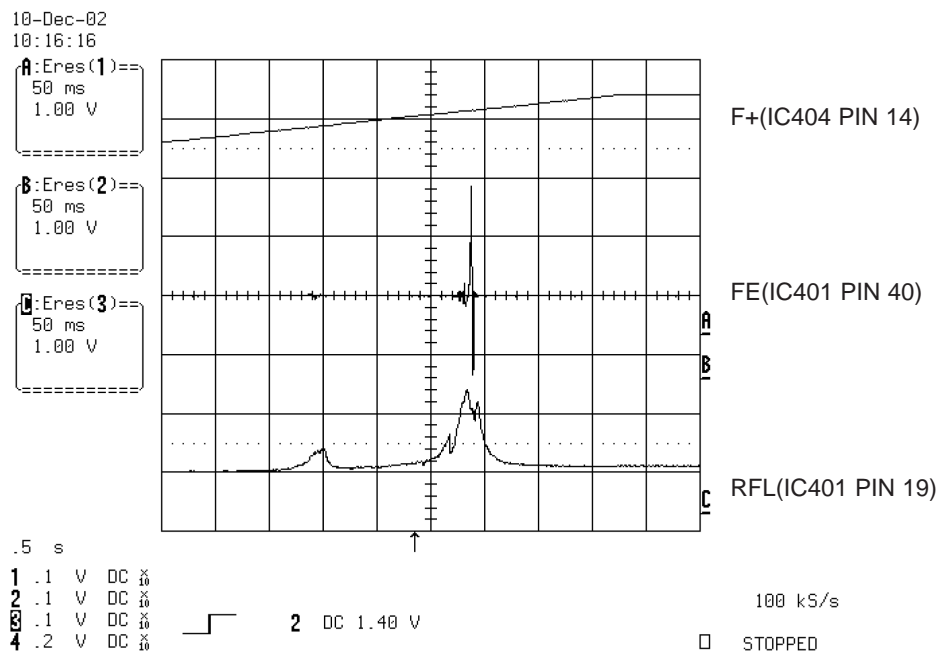


FIG 7-4 (CD)

## 8. FOCUS ON WAVEFORMS

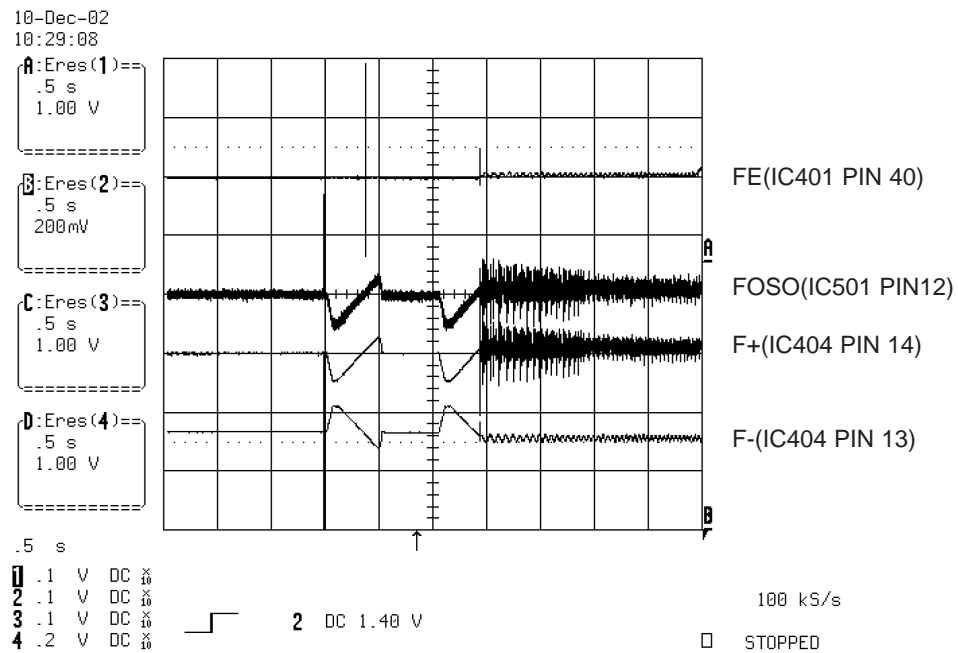


FIG 8-1 (DVD)

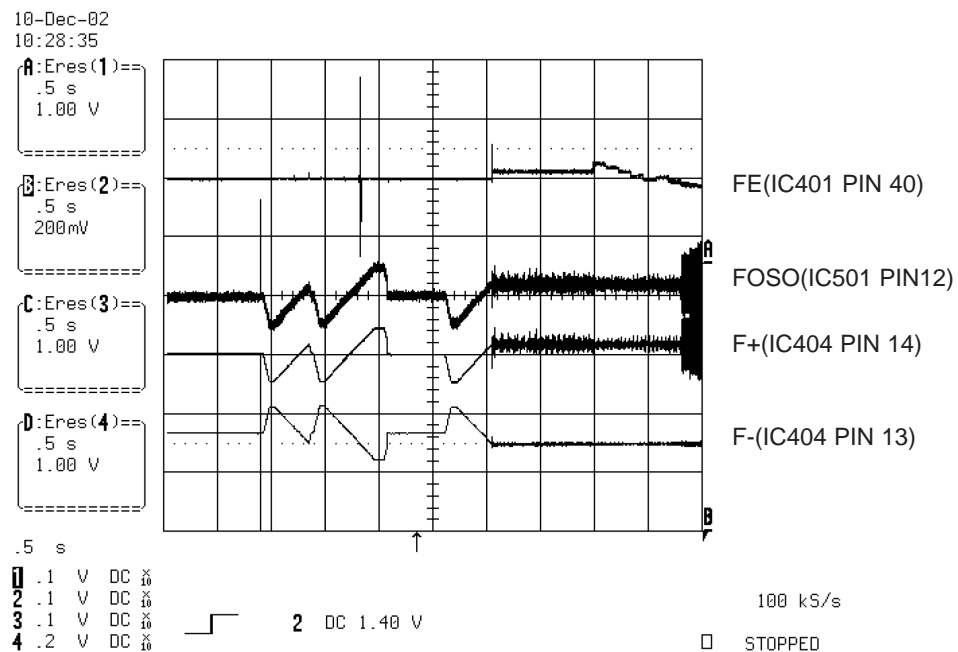


FIG 8-2 (CD)

## 9. SPINDLE CONTROL WAVEFORMS (NO DISC CONDITION)

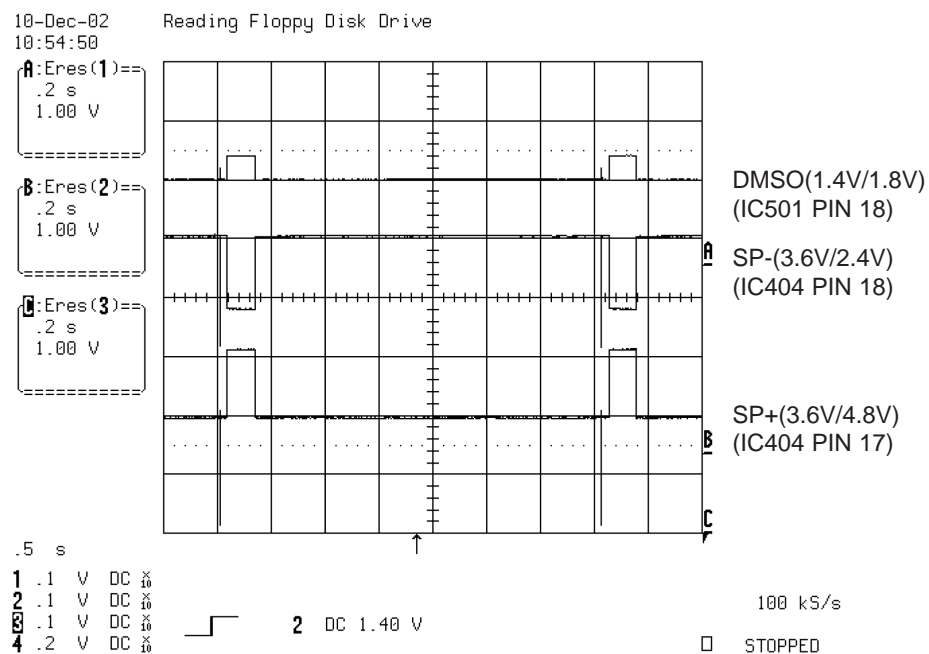


FIG 9-1

## 10. TRACKING CONTROL RELATED SIGNAL(System checking)

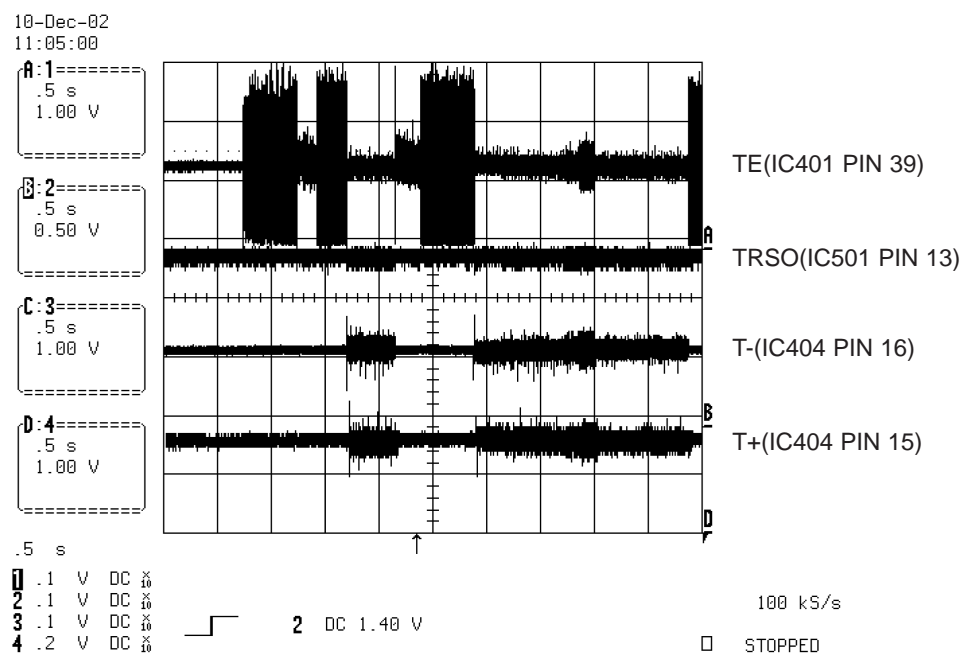


FIG 10-1(DVD)

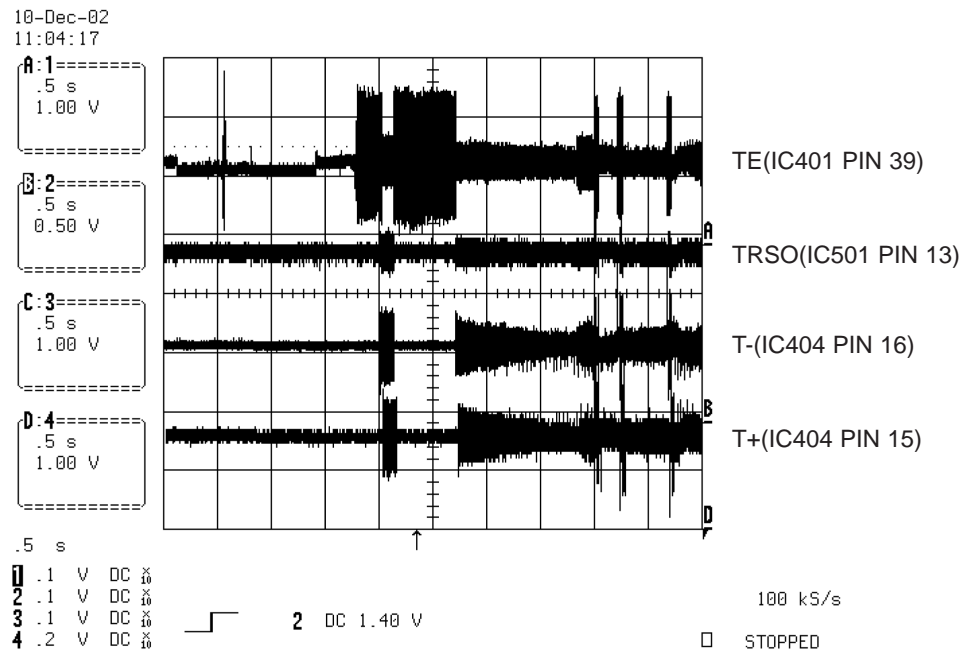


FIG 10-2(CD)

## 11. RF WAVEFORM

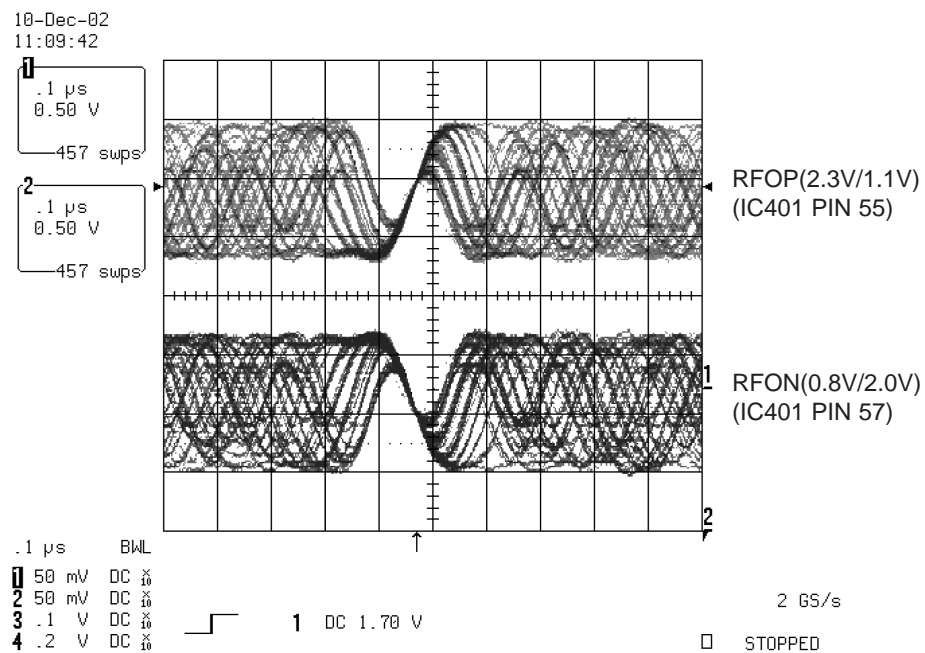


FIG 11-1

## 12. ES6698FD VIDEO OUTPUT WAVEFORMS

### 1) Full colorbar signal(COMPOSIT)

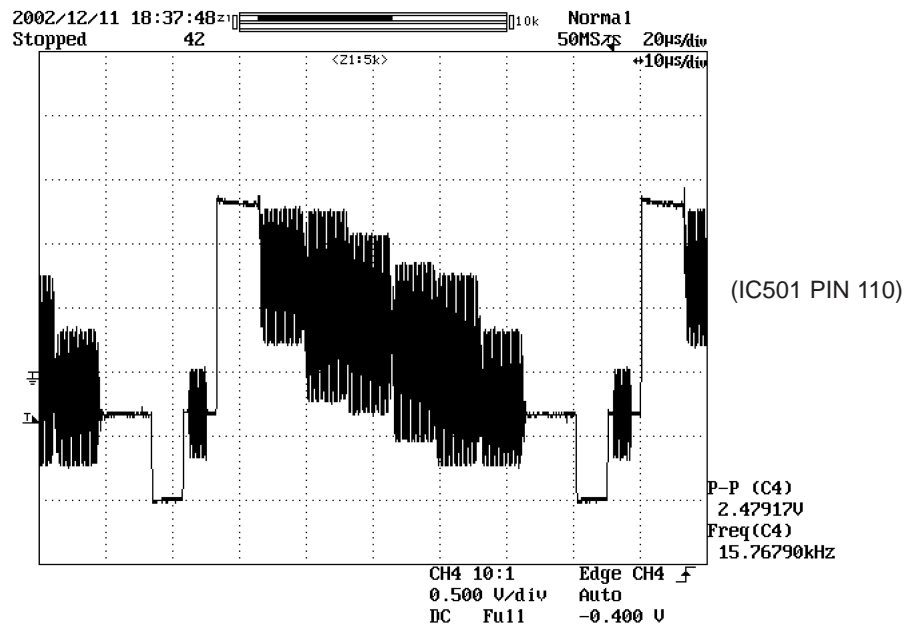


FIG 12-1

### 2) Y

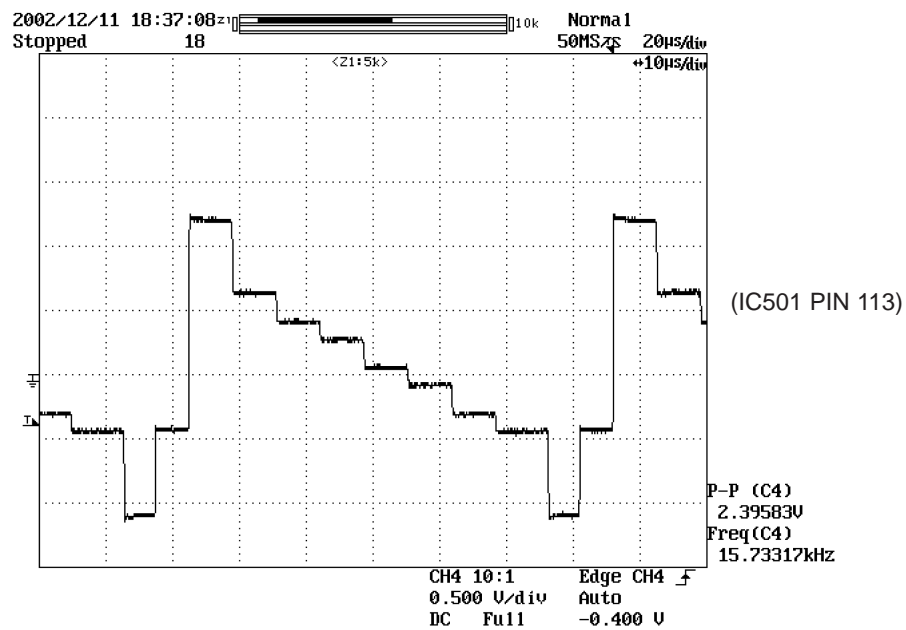


FIG 12-2

## 13. AUDIO OUTPUT FROM PWM IC

### 1) Audio L/R

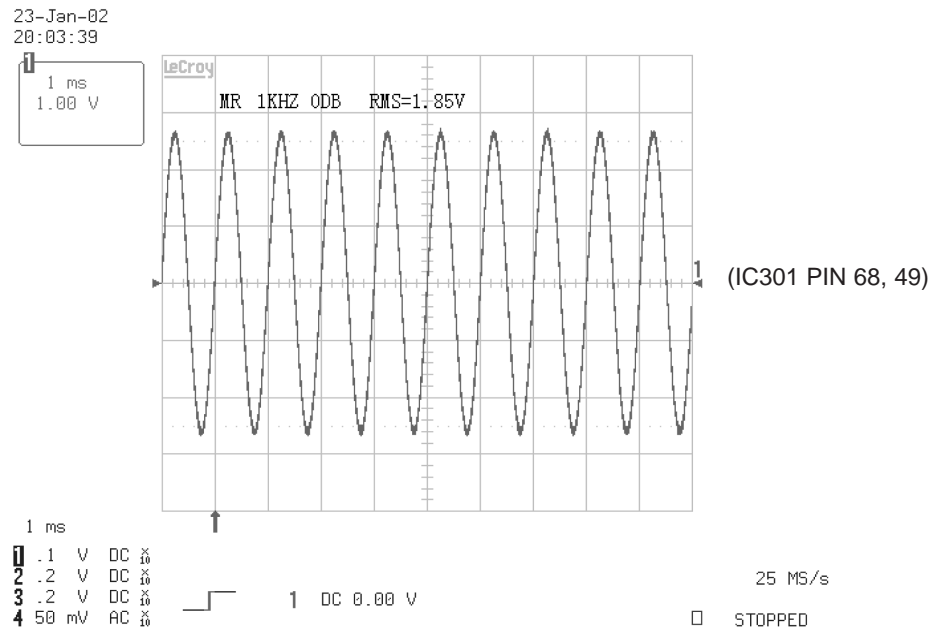


FIG 13-1

### 2) Audio related Signal

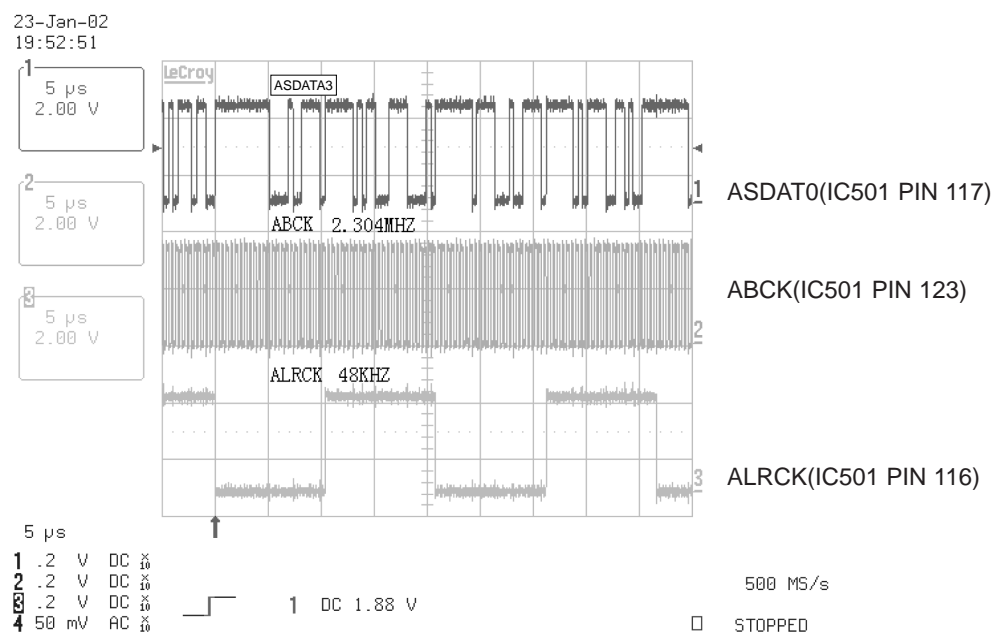
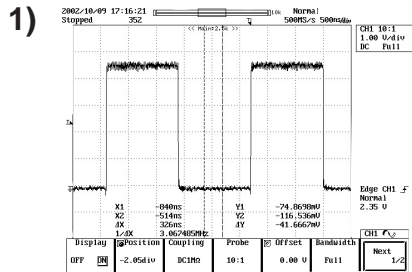
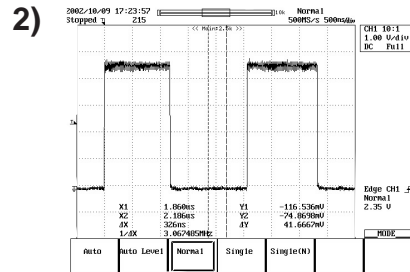


FIG 13-2

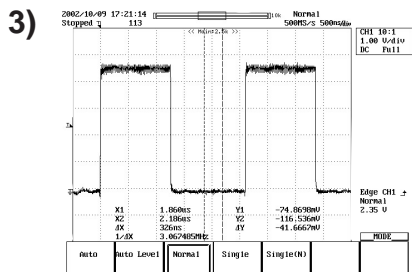
## 14. DVD & AMP WAVEFORMS



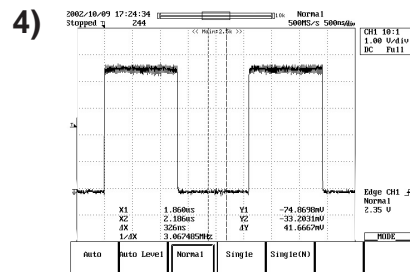
- R310 → TP301  
or  
R311 TP302



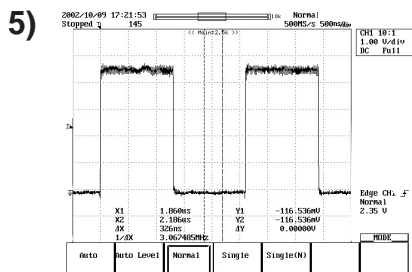
- R320 → TP311  
or  
R321 TP312



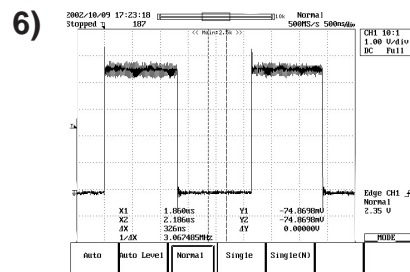
- R312 → TP303  
or  
R313 TP304



- R318 → TP307  
or  
R319 TP308



- R314 → TP305  
or  
R315 TP304



- R318 → TP309  
or  
R319 TP310

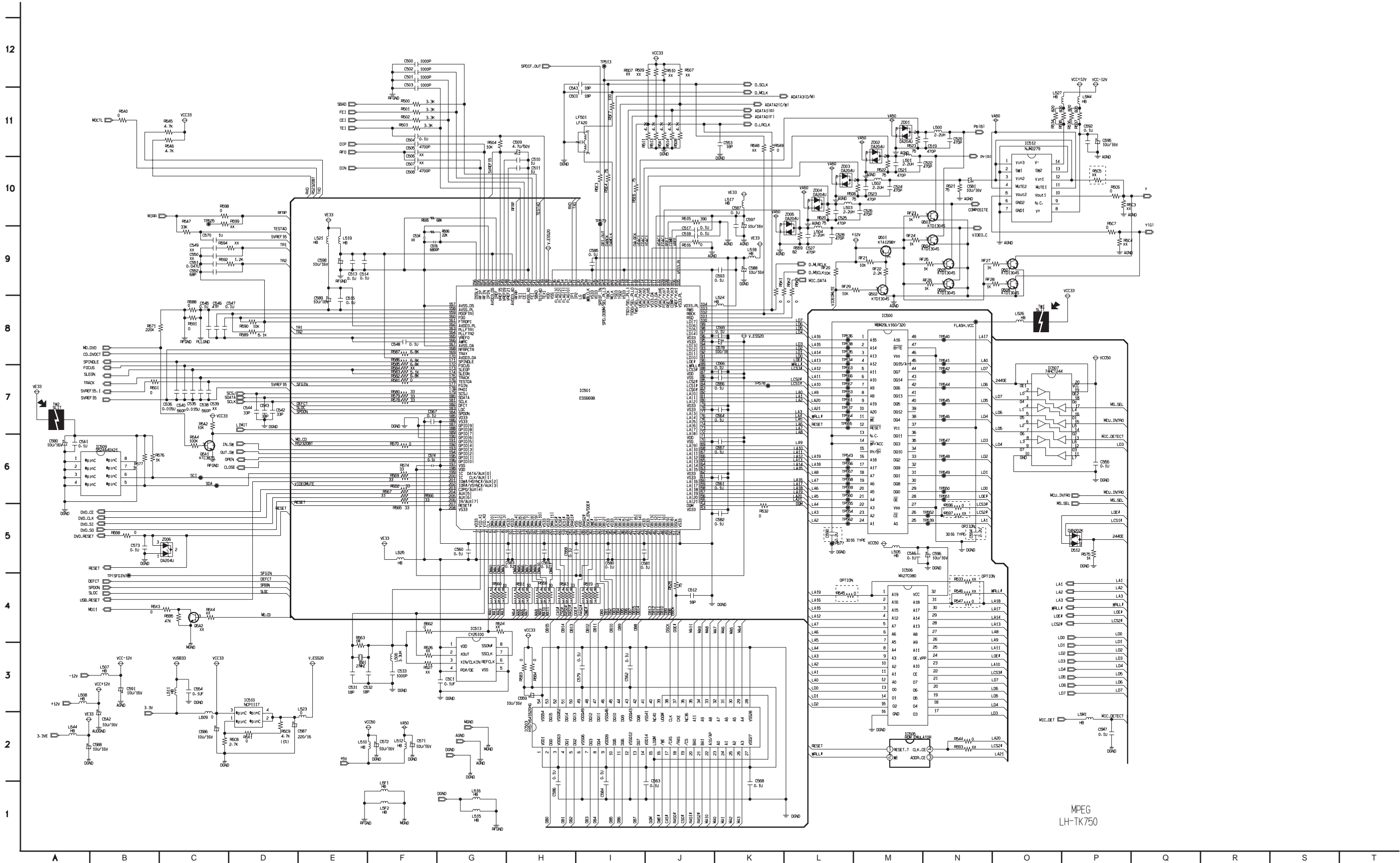


# MEMO

Handwriting practice lines consisting of 25 horizontal dotted lines.

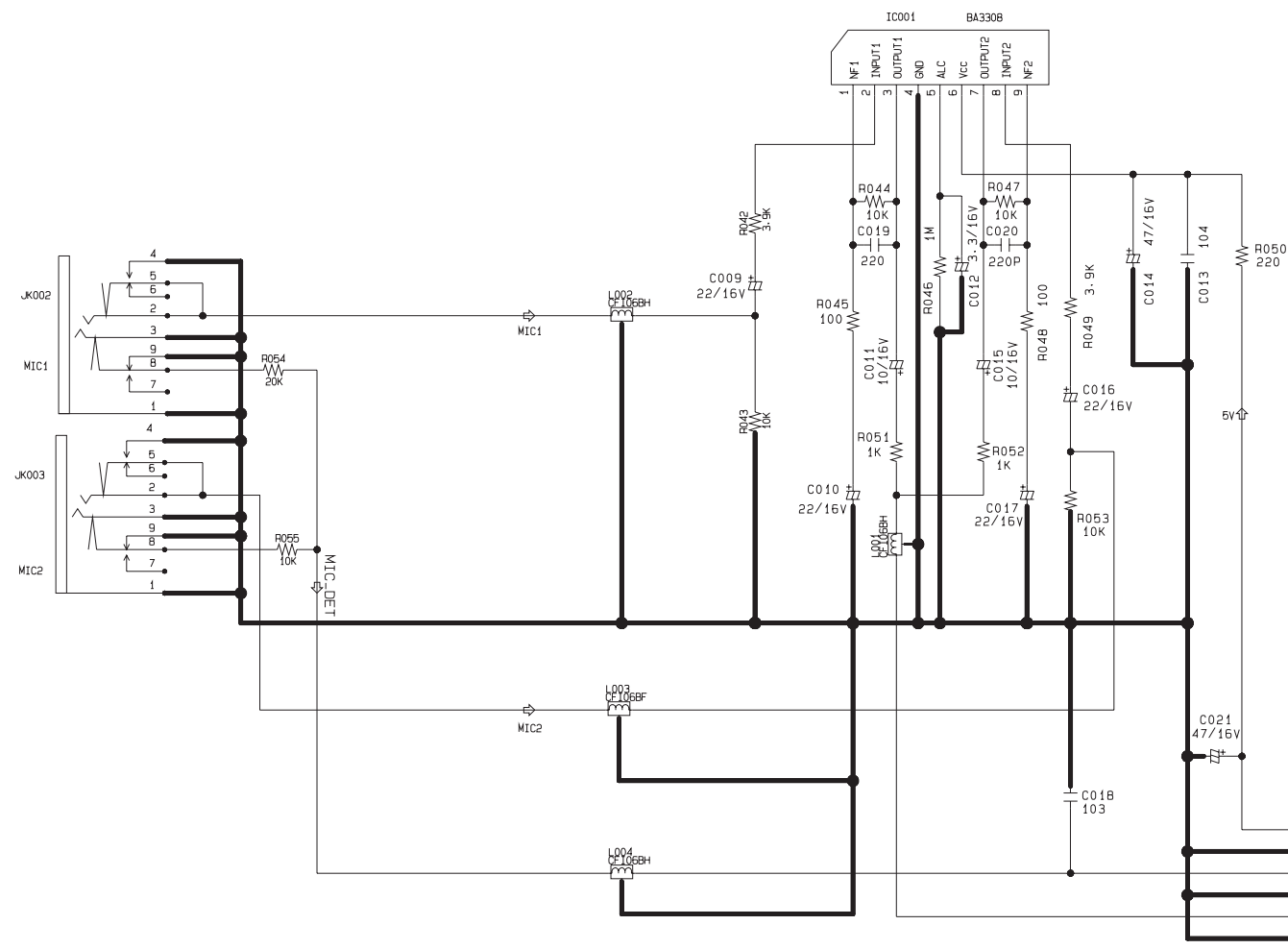
## DVD PART SCHEMATIC DIAGRAMS

## 1. DVD MPEG & DSP SCHEMATIC DIAGRAM

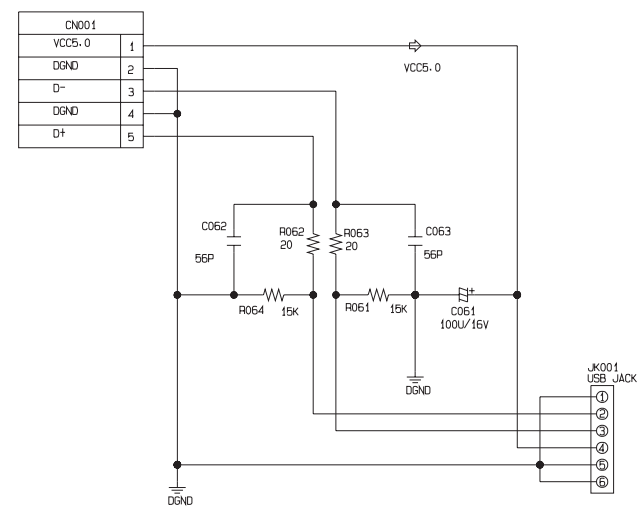




3. FRONT MIC SCHEMATIC DIAGRAM(KARAOKE MODEL ONLY)

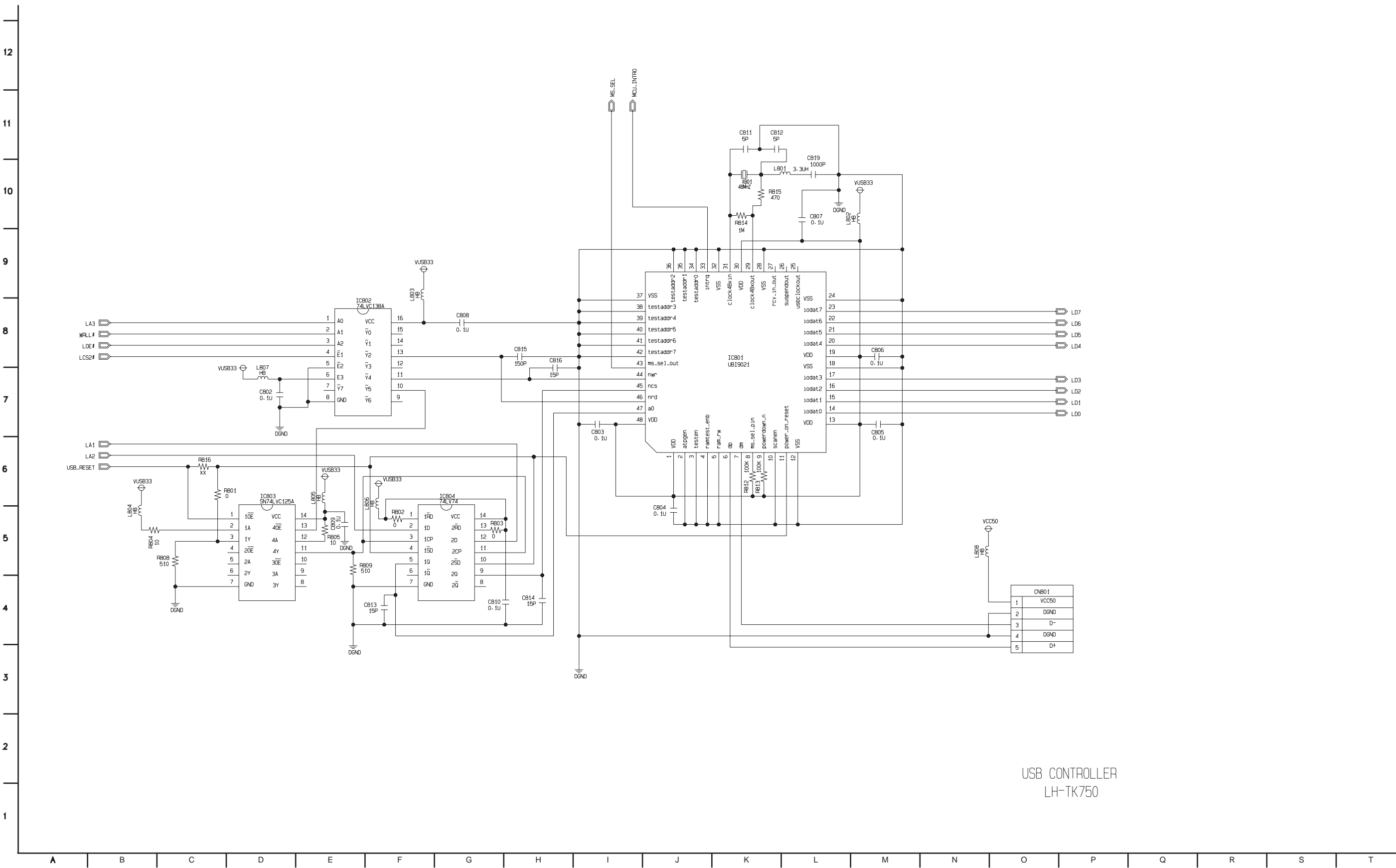


<< FRONT MIC SECTION >>



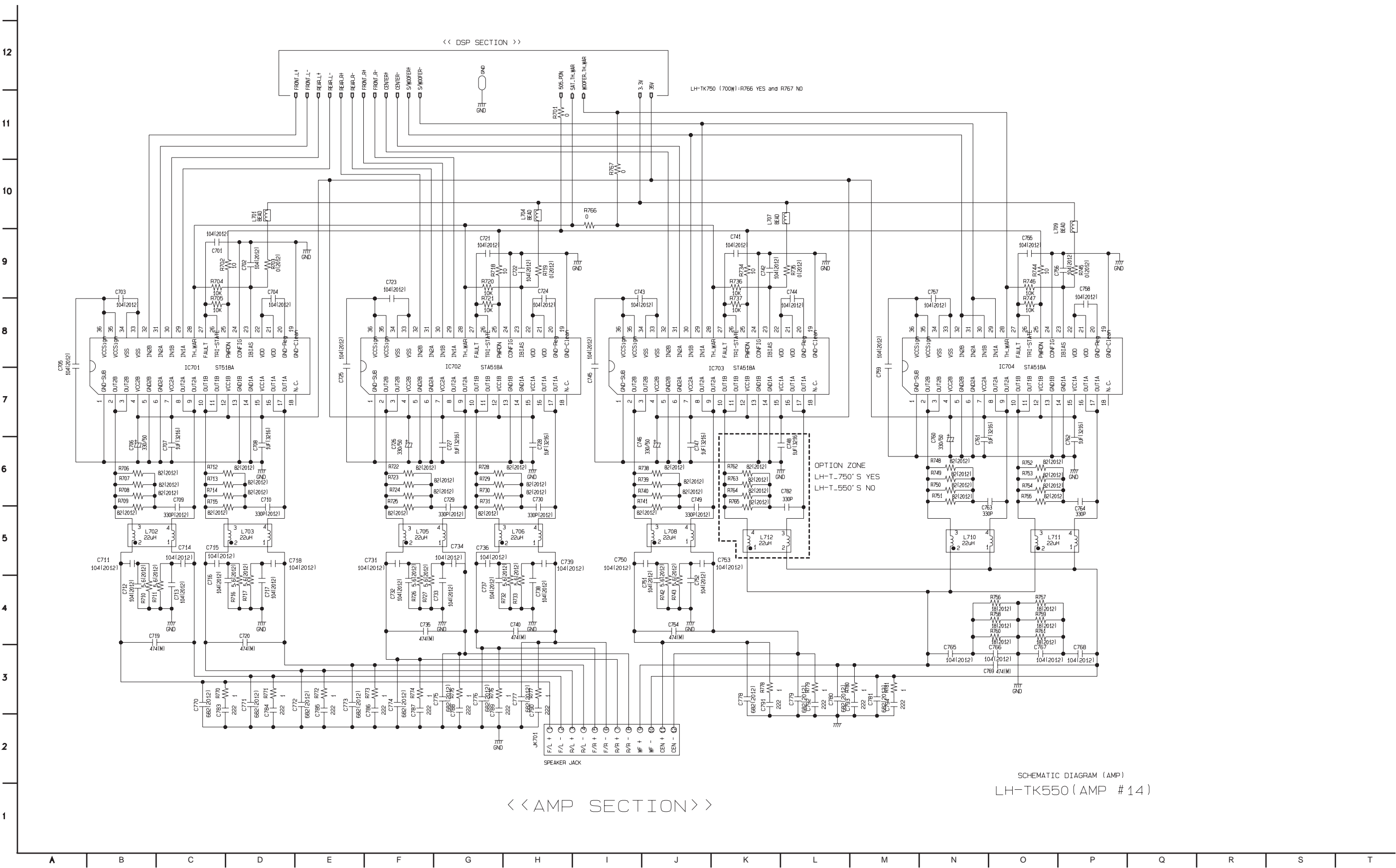
SCHEMATIC DIAGRAM(MIC)  
LH-TK750 (MIC #012)

4. USB CONTROLLER SCHEMATIC DIAGRAM



USB CONTROLLER  
LH-TK750

5. AMP SCHEMATIC DIAGRAM ( 5TOOL )



SCHEMATIC DIAGRAM (AMP)  
LH-TK550 (AMP #14)

12  
—  
11  
—  
10  
—  
9  
—  
8  
—  
7  
—  
6  
—  
5  
—  
4  
—  
3  
—  
2  
—  
1



<< AMP SECTION >>

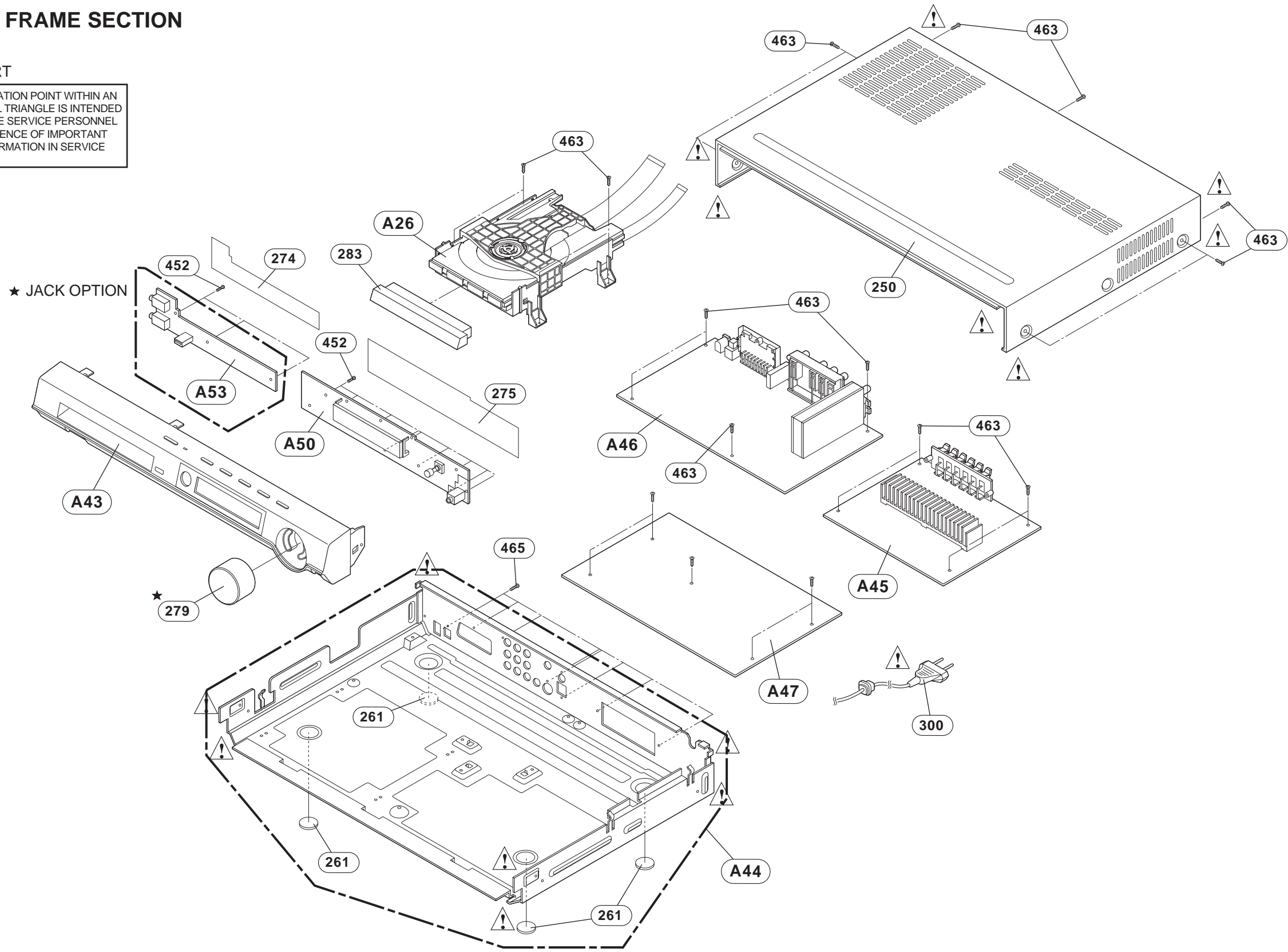


# SECTION 4. EXPLODED VIEWS

## • CABINET AND MAIN FRAME SECTION

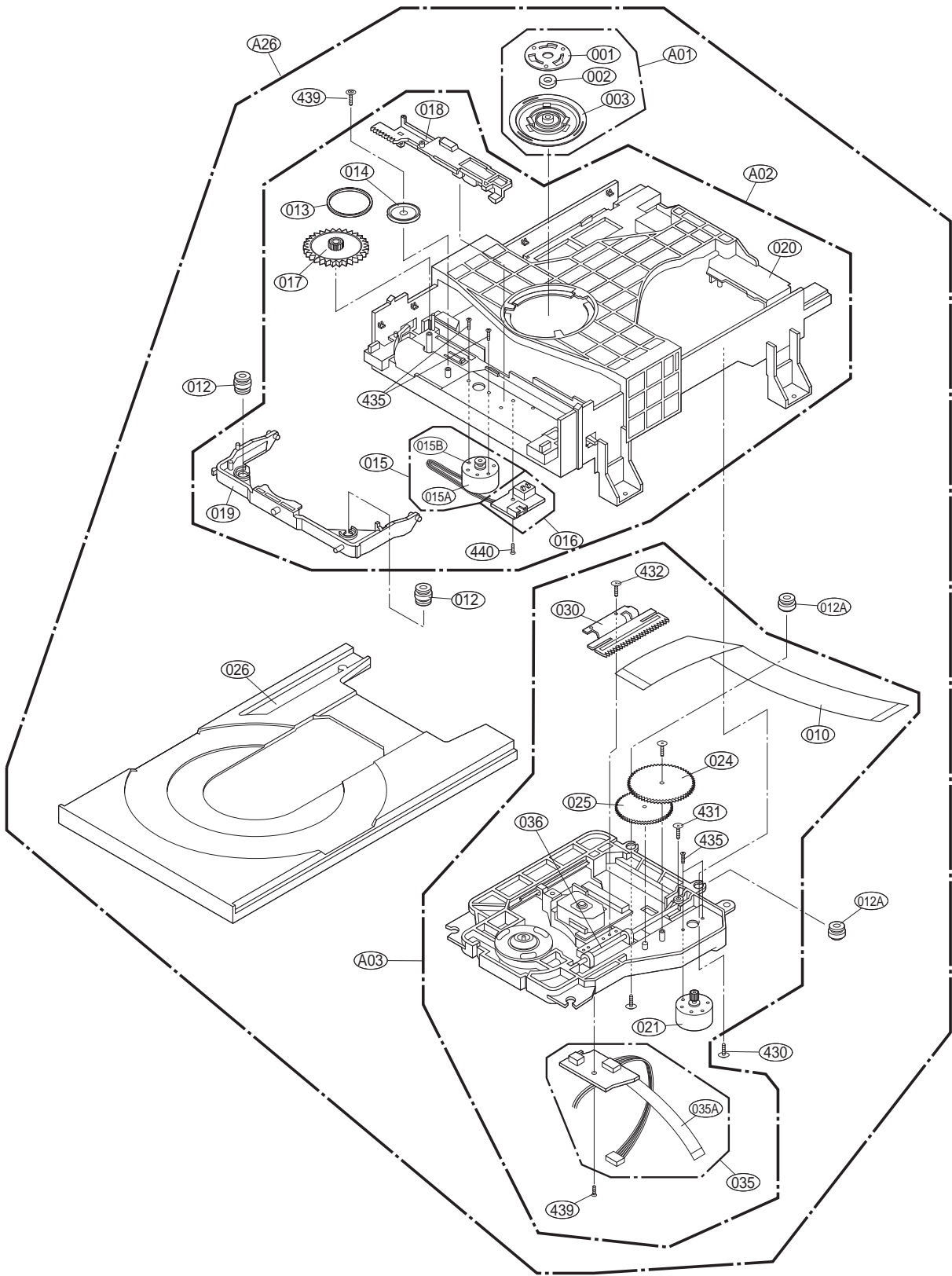
★ OPTIONAL PART

NOTES) THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.



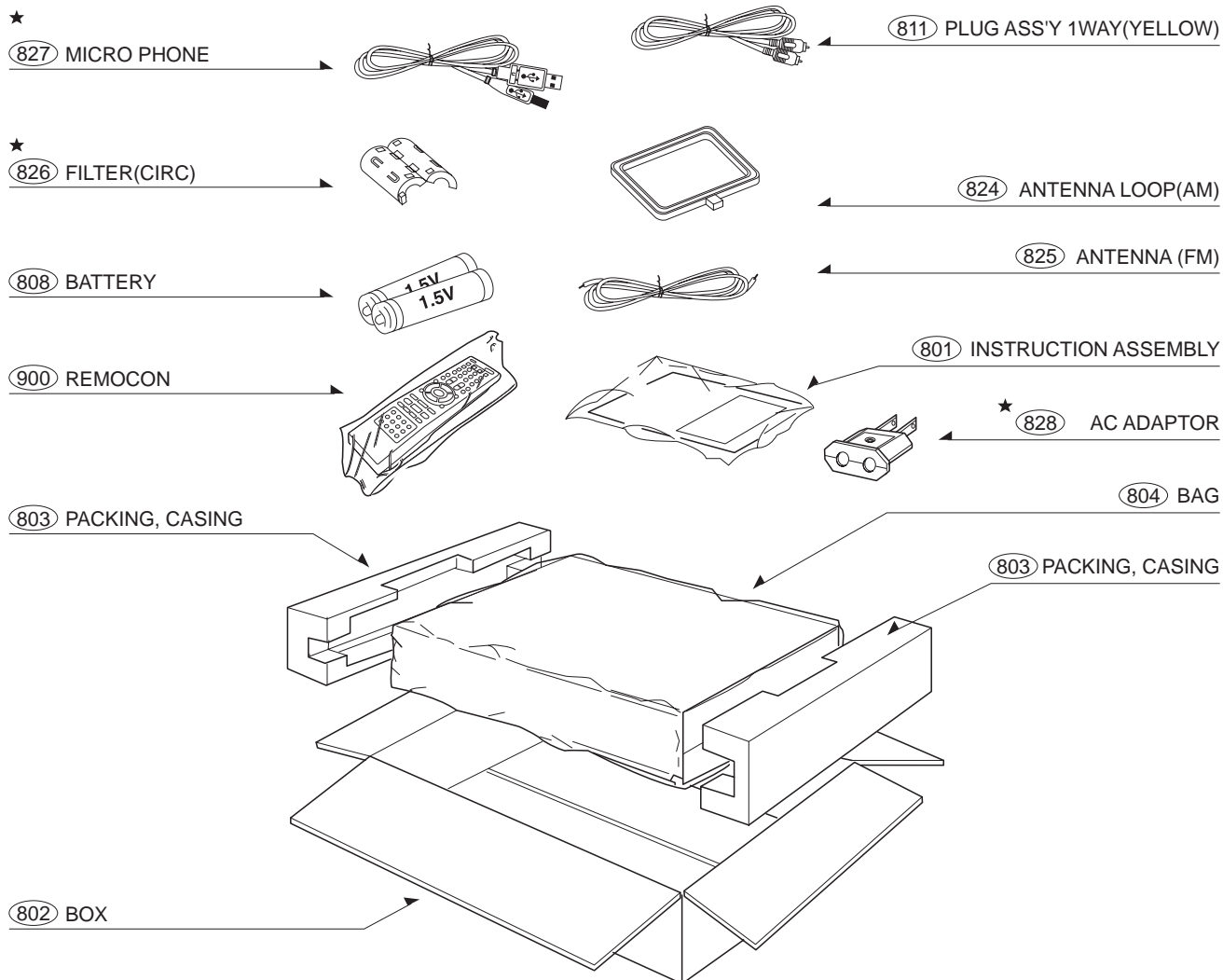


• DECK MECHANISM EXPLODED VIEW



## • Packing Accessory Section

★ OPTIONAL PART



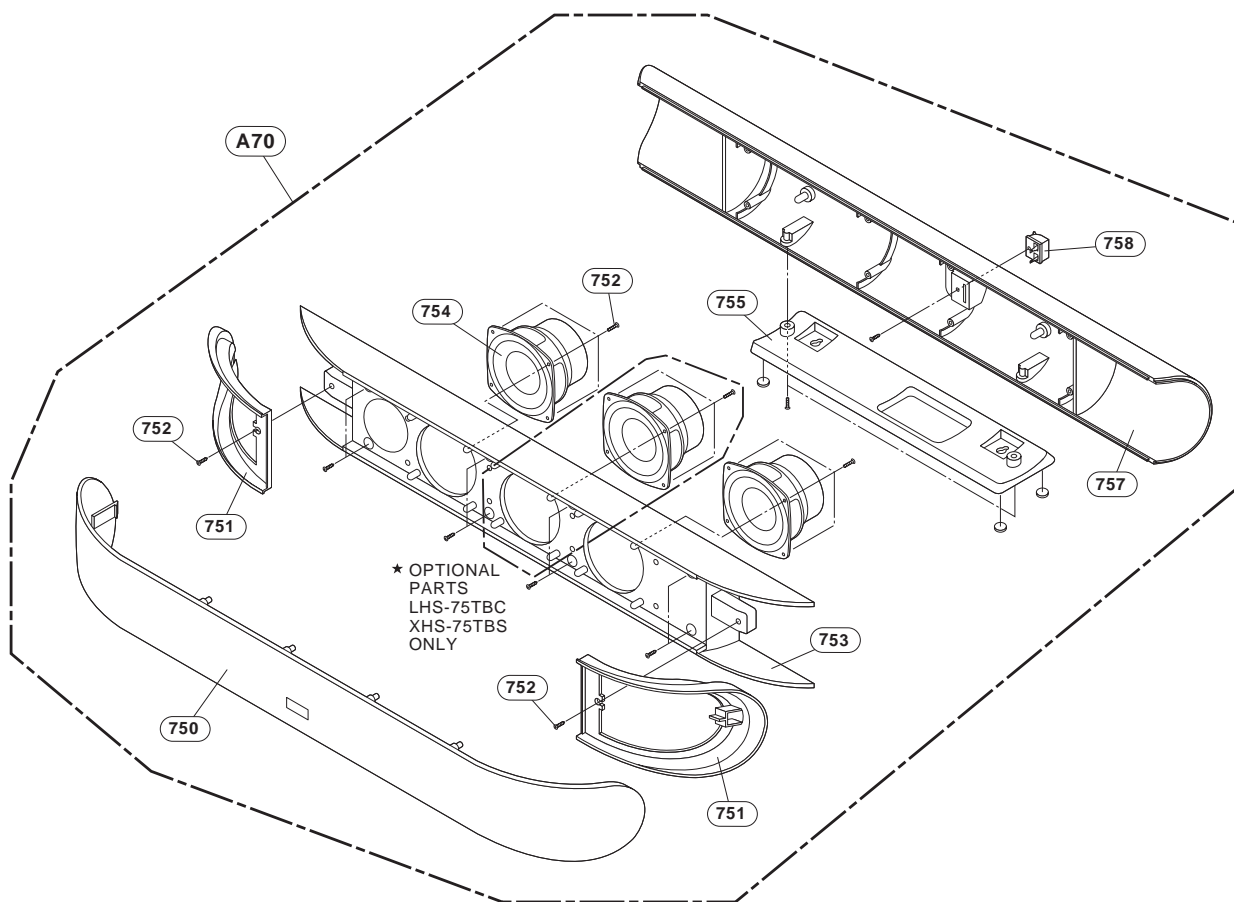
# MEMO

Handwriting practice lines consisting of 28 horizontal dotted lines.

# SECTION 5. SPEAKER SECTION

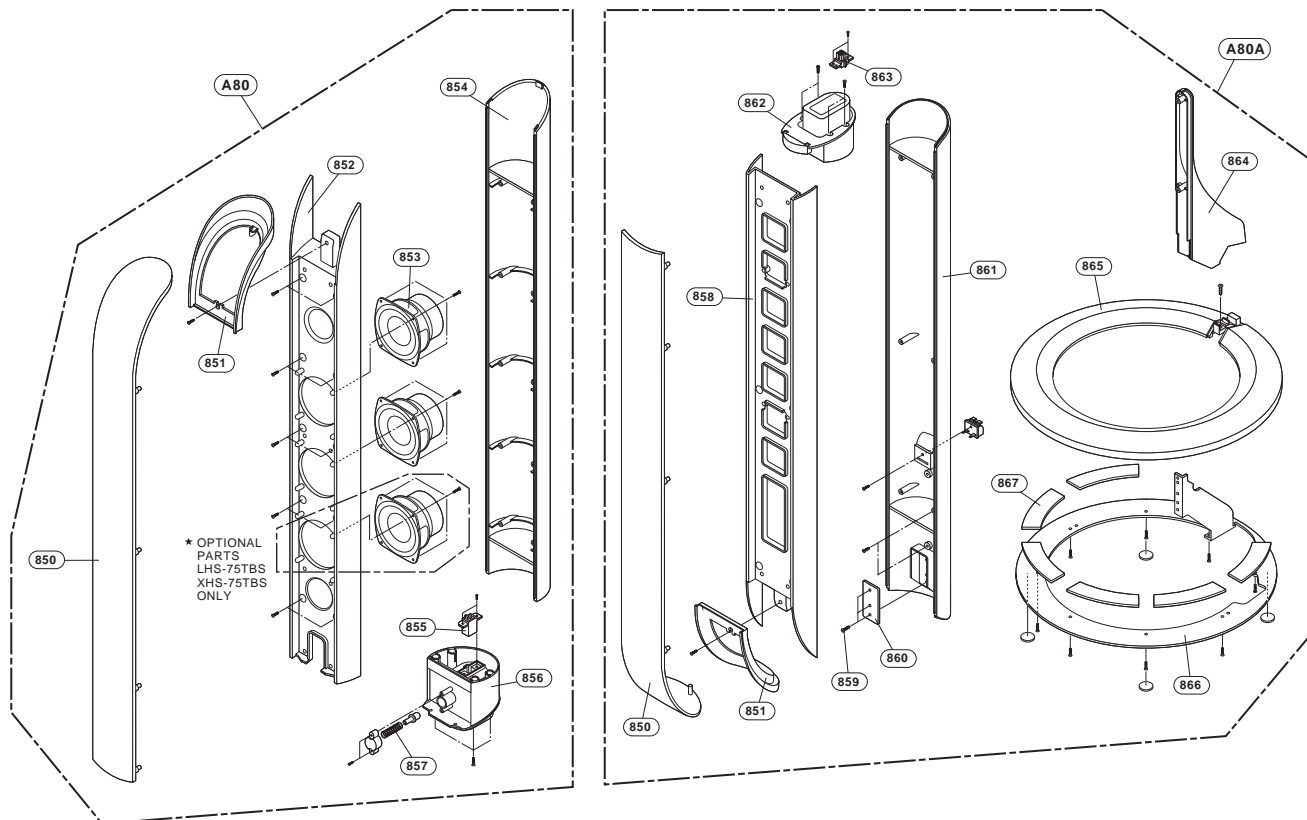
## • CENTER SPEAKER

MODEL : LHS-55TBC



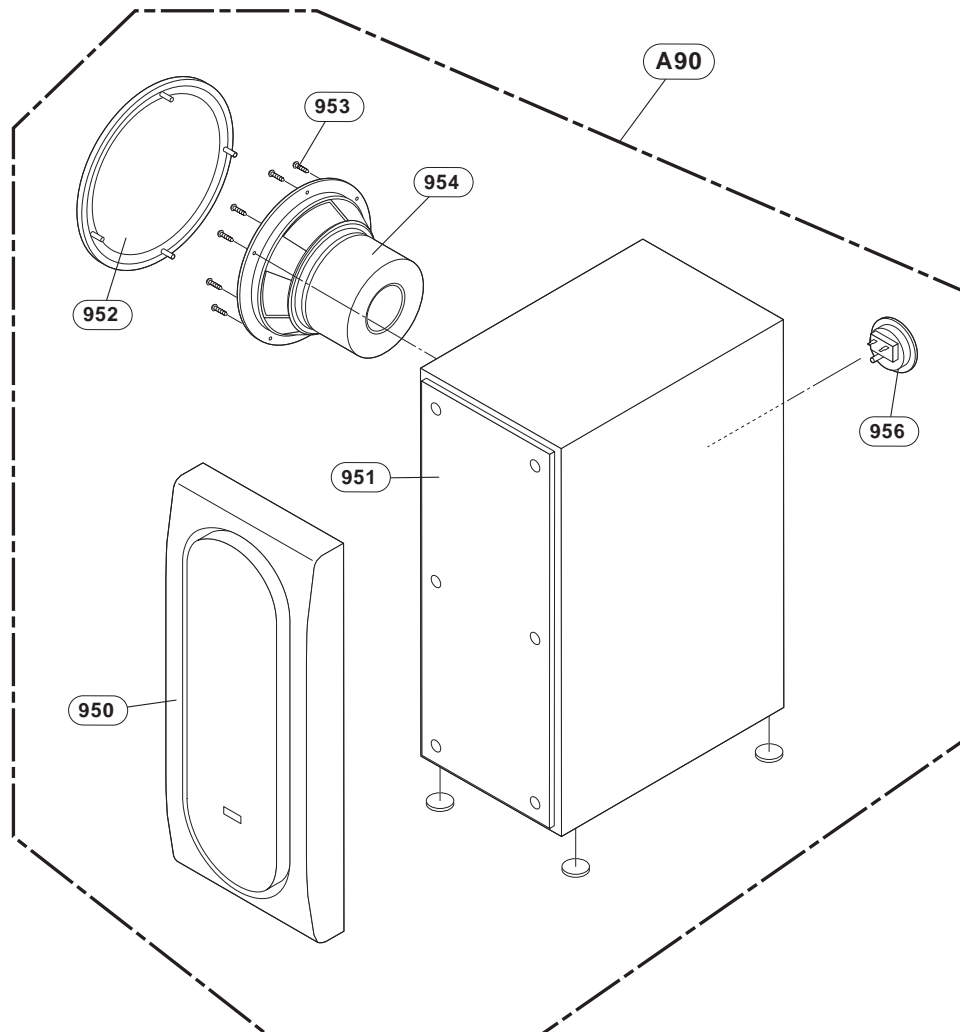
# • FRONT/REAR SPEAKER

MODEL : LHS-55TBS

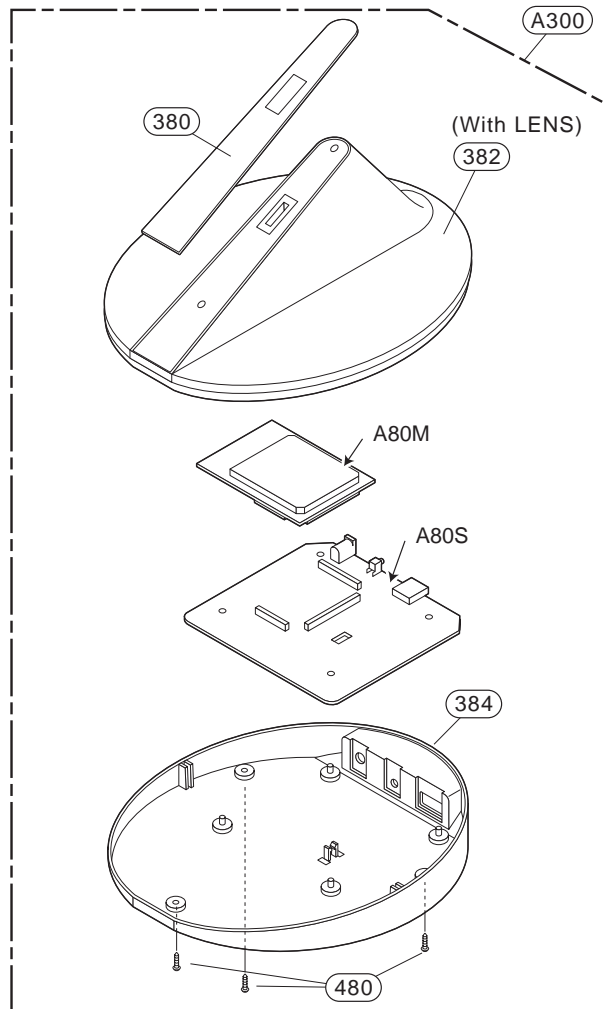


## • SUB WOOFER SPEAKER

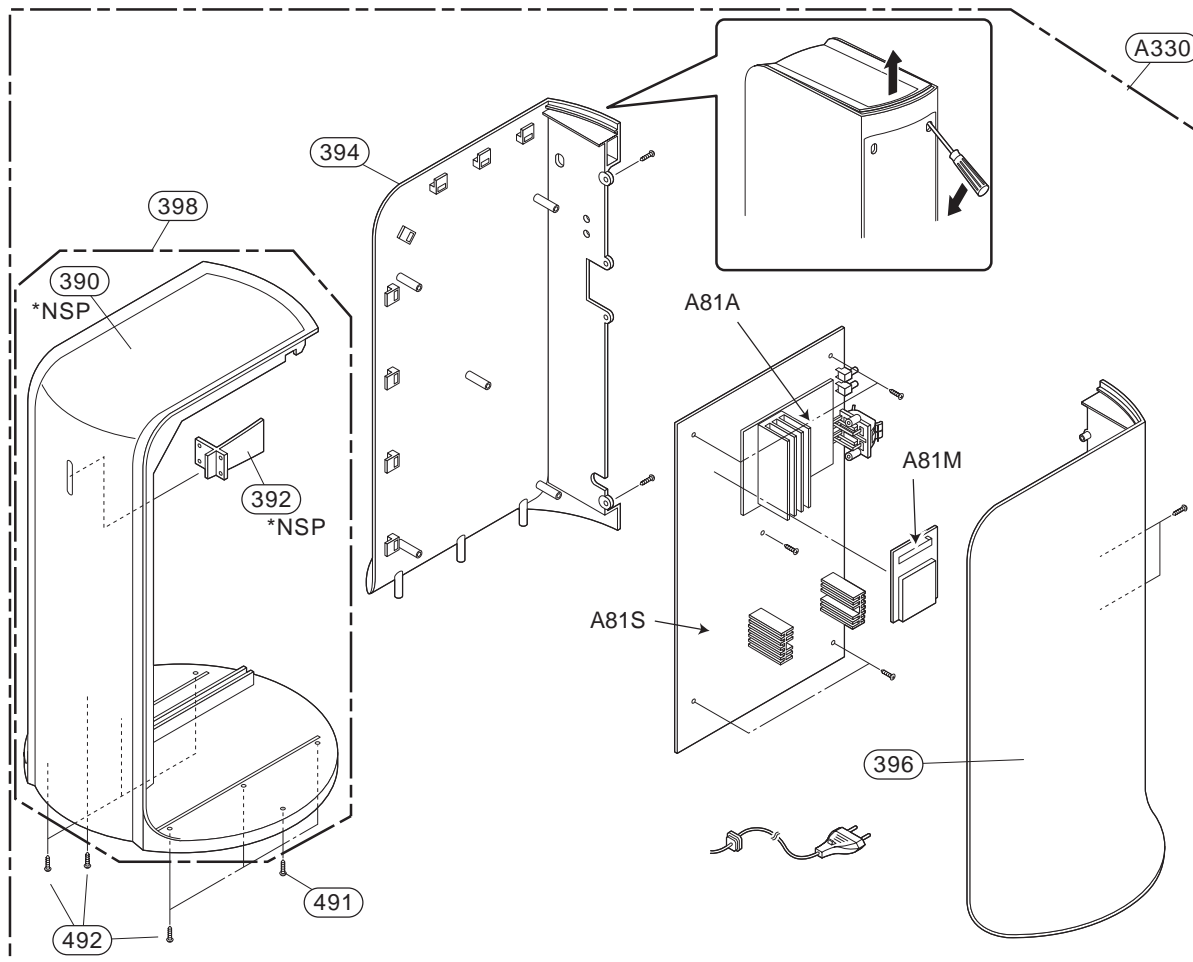
MODEL : LHS-55TBW



- **MODEL : TRANSMITTER (ACC55T)**



• **MODEL : RECEIVER(ACC55R)**

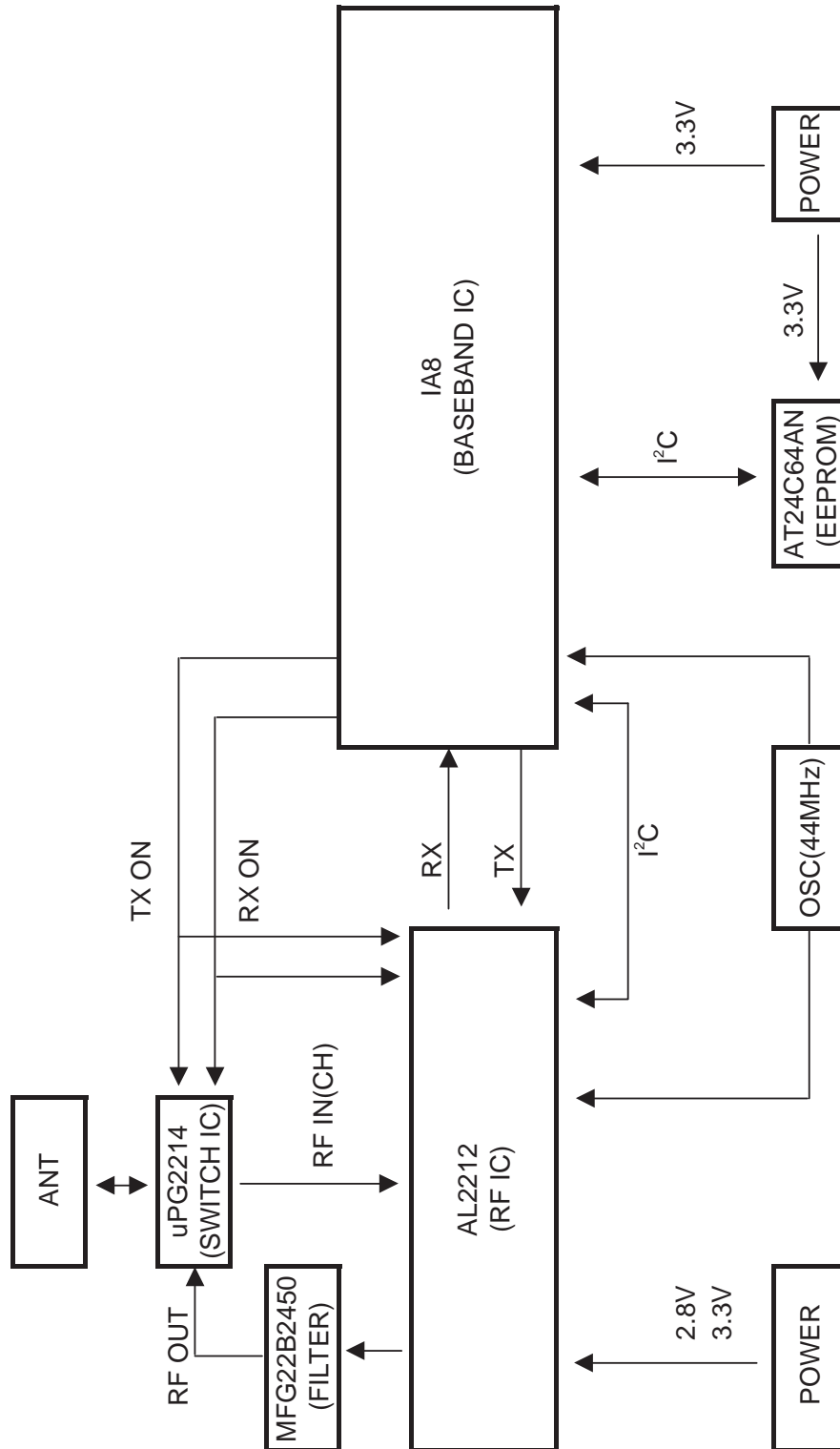




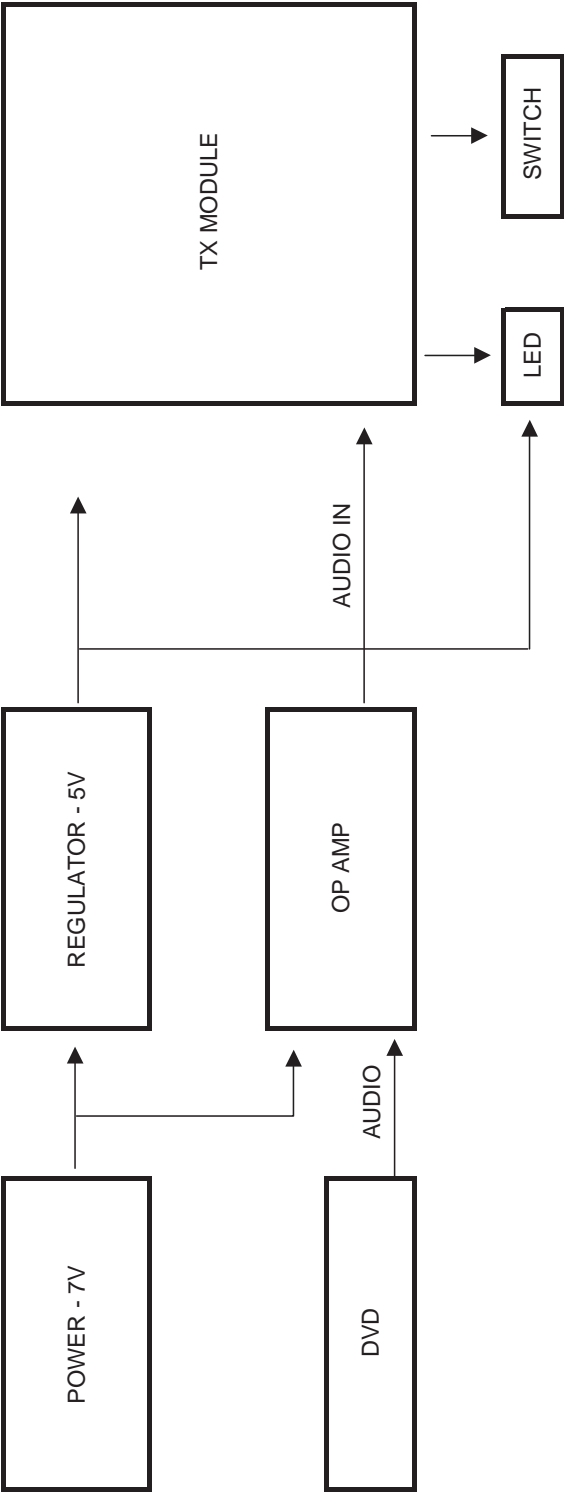
## < REFERENCE >

### 5-1. TRANSMITTER(TX) ELECTRICAL

#### 5-1-1. TX MODULE BLOCK DIAGRAM

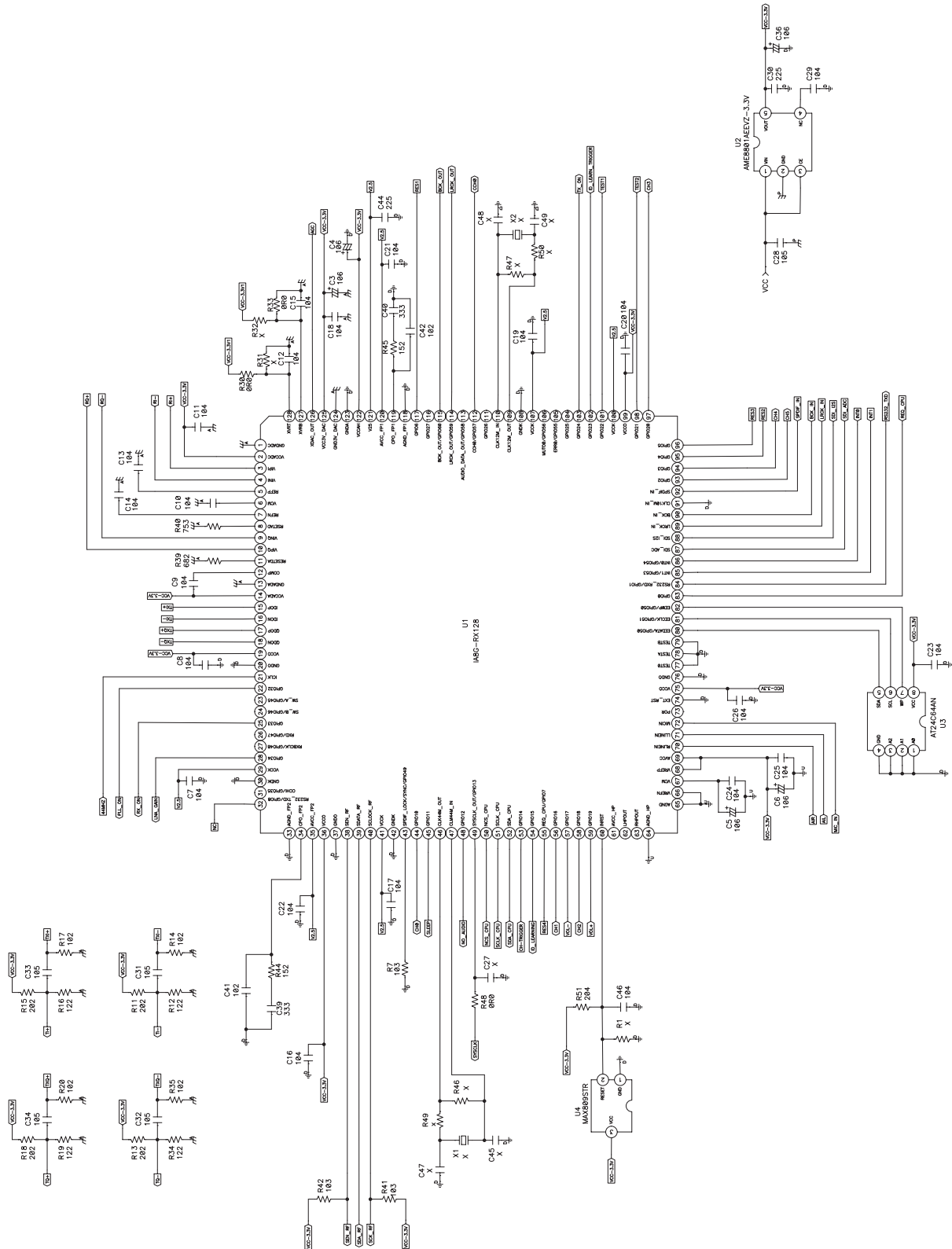


5-1-2. TX SUB BLOCK DIAGRAM

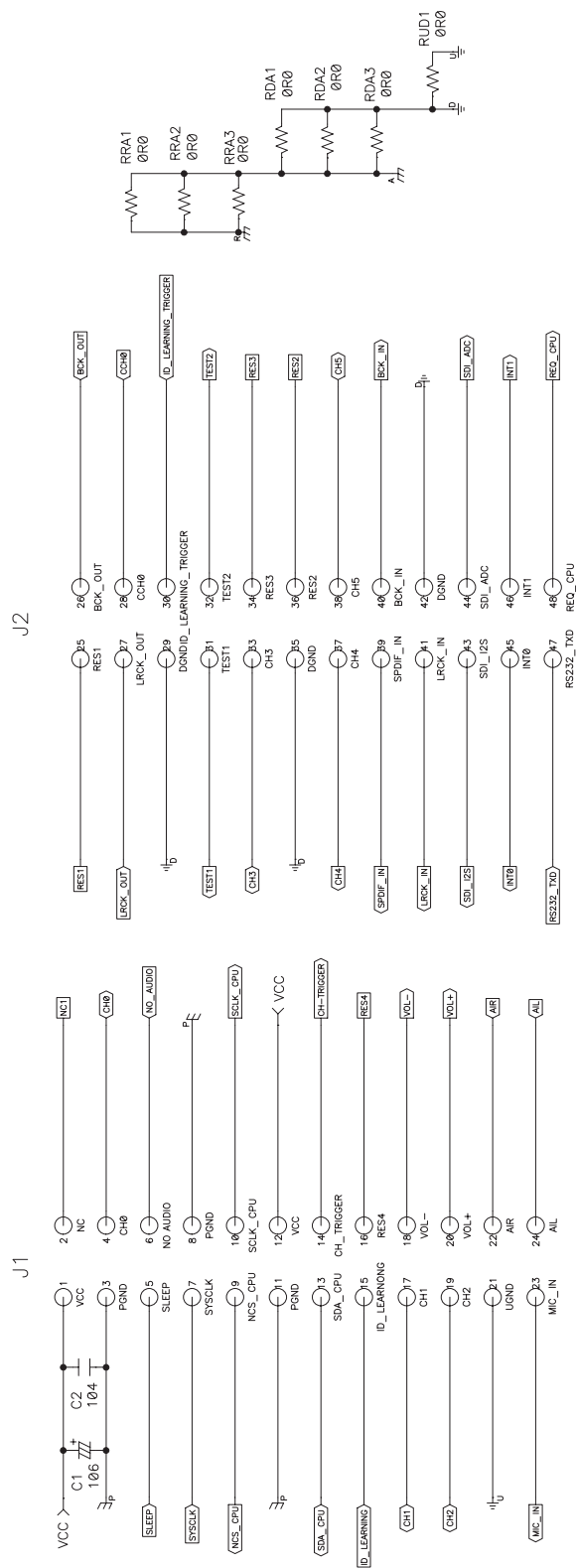




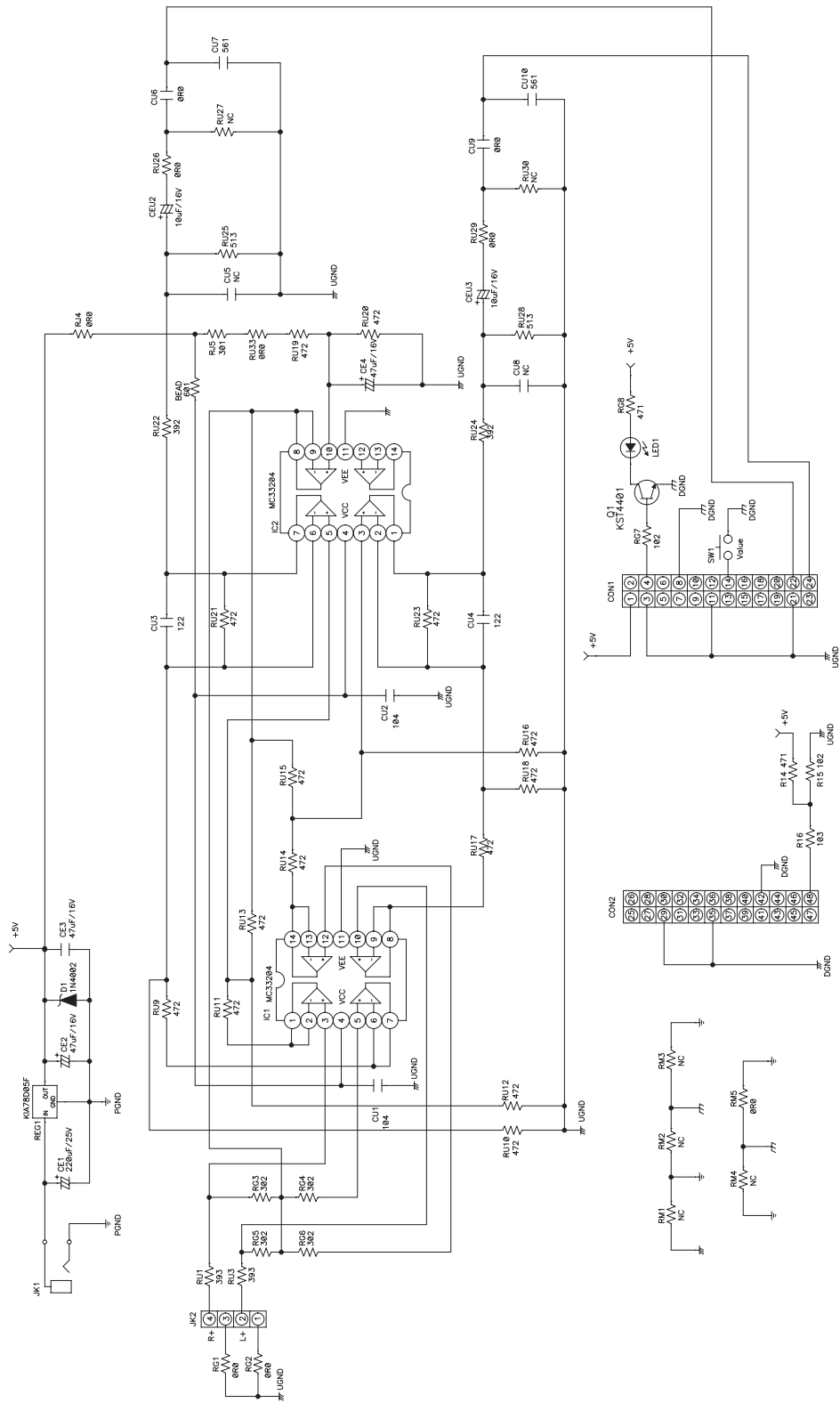
## 5-1-4. TX MODULE SCHEMATIC DIAGRAM\_2



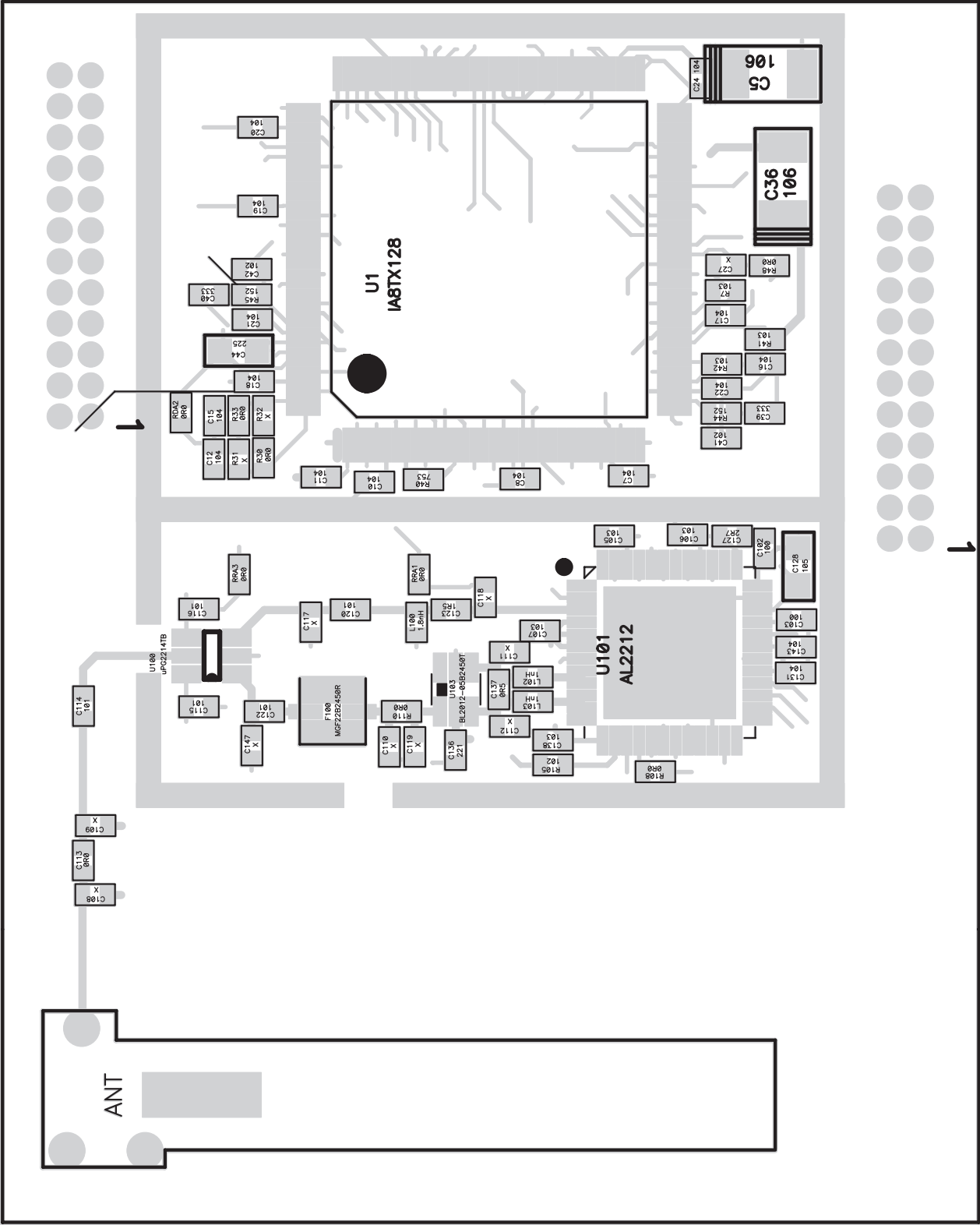
5-1-5. TX MODULE SCHEMATIC DIAGRAM\_3



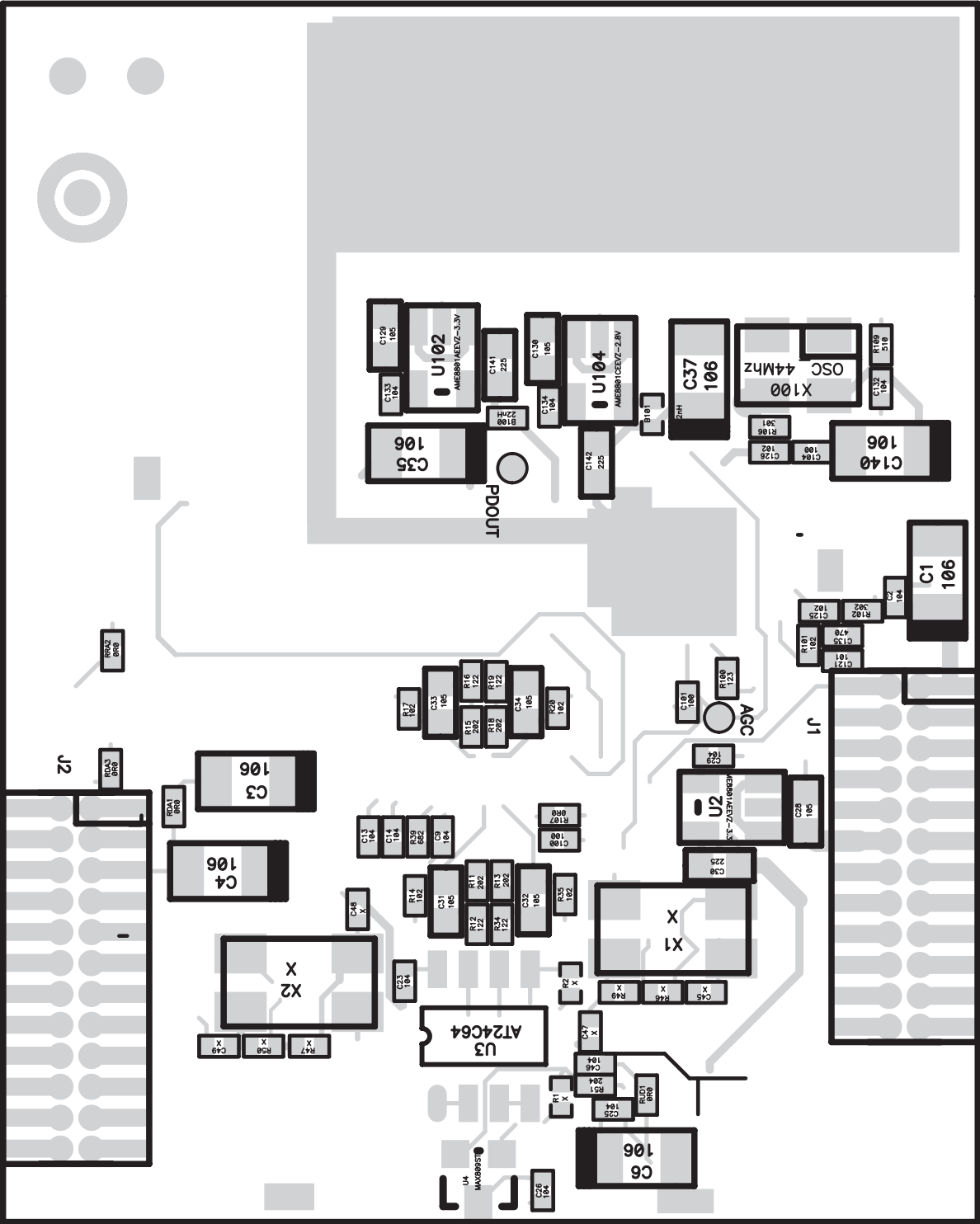
### 5-1-6. TX SUB SCHEMATIC DIAGRAM



5-1-7. TX MODULE PRINTED CIRCUITED DIAGRAM(UPPER SIDE)

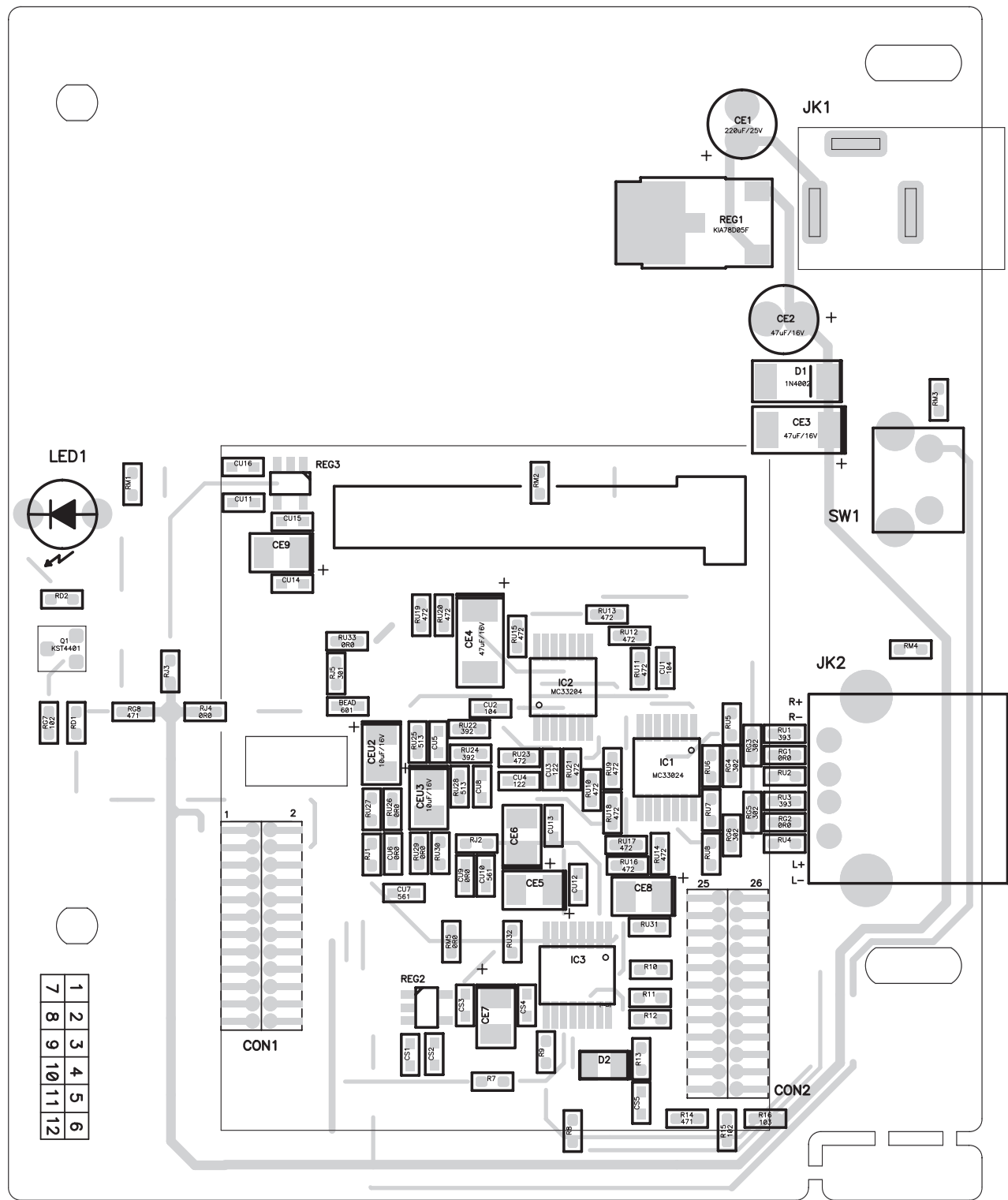


5-1-8. TX MODULE PRINTED CIRCUITED DIAGRAM(LOWER SIDE)



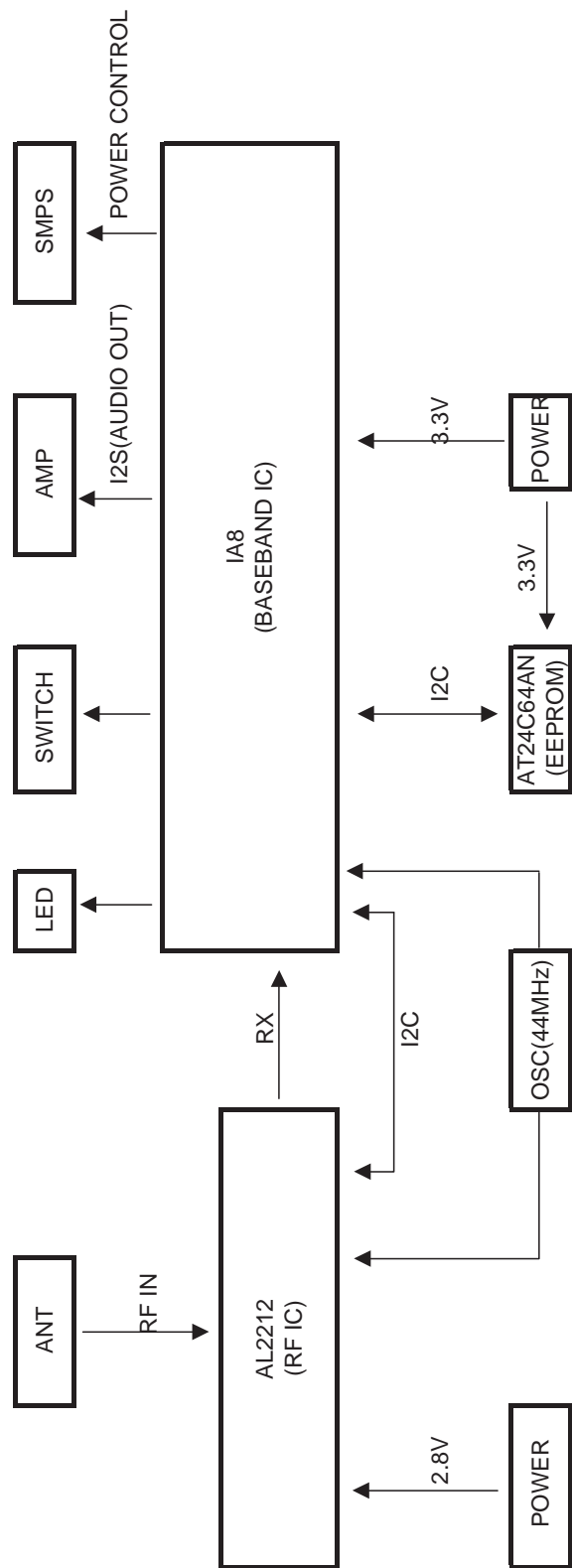


# 5-1-9. TX PRINTED CIRCUITED DIAGRAM

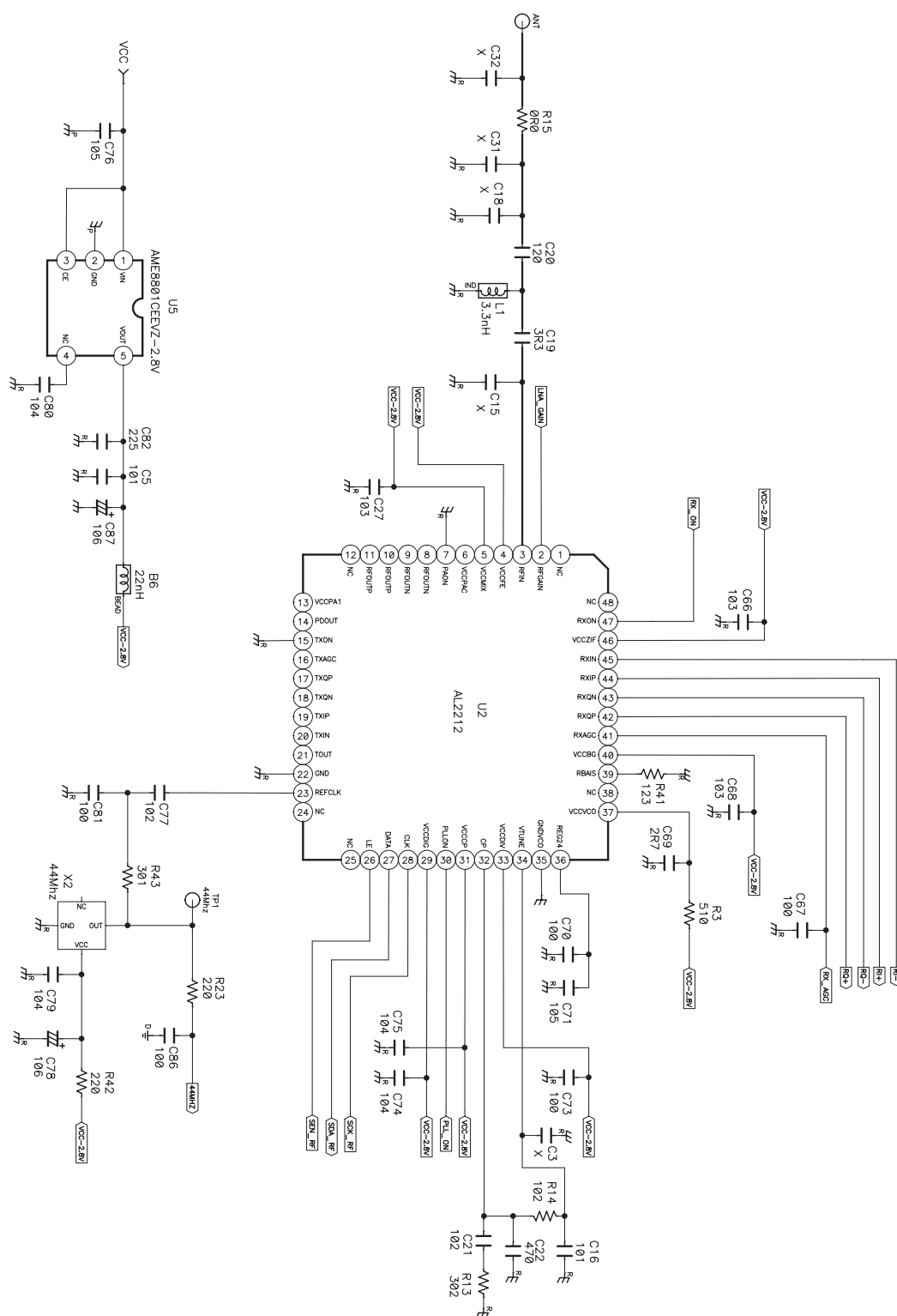


5-2. RECEIVER(RX) ELECTRICAL

5-2-1. RX MODULE BLOCK DIAGRAM

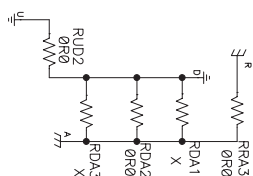
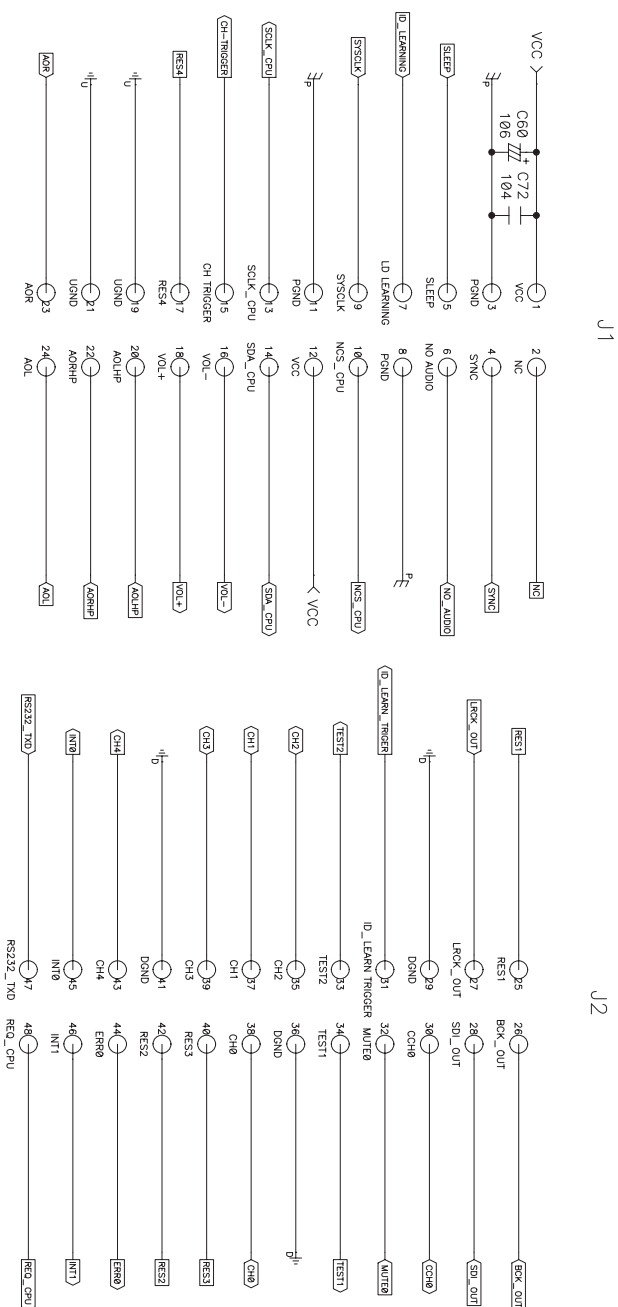


### 5-2-2. RX MODULE SCHEMATIC DIAGRAM\_1

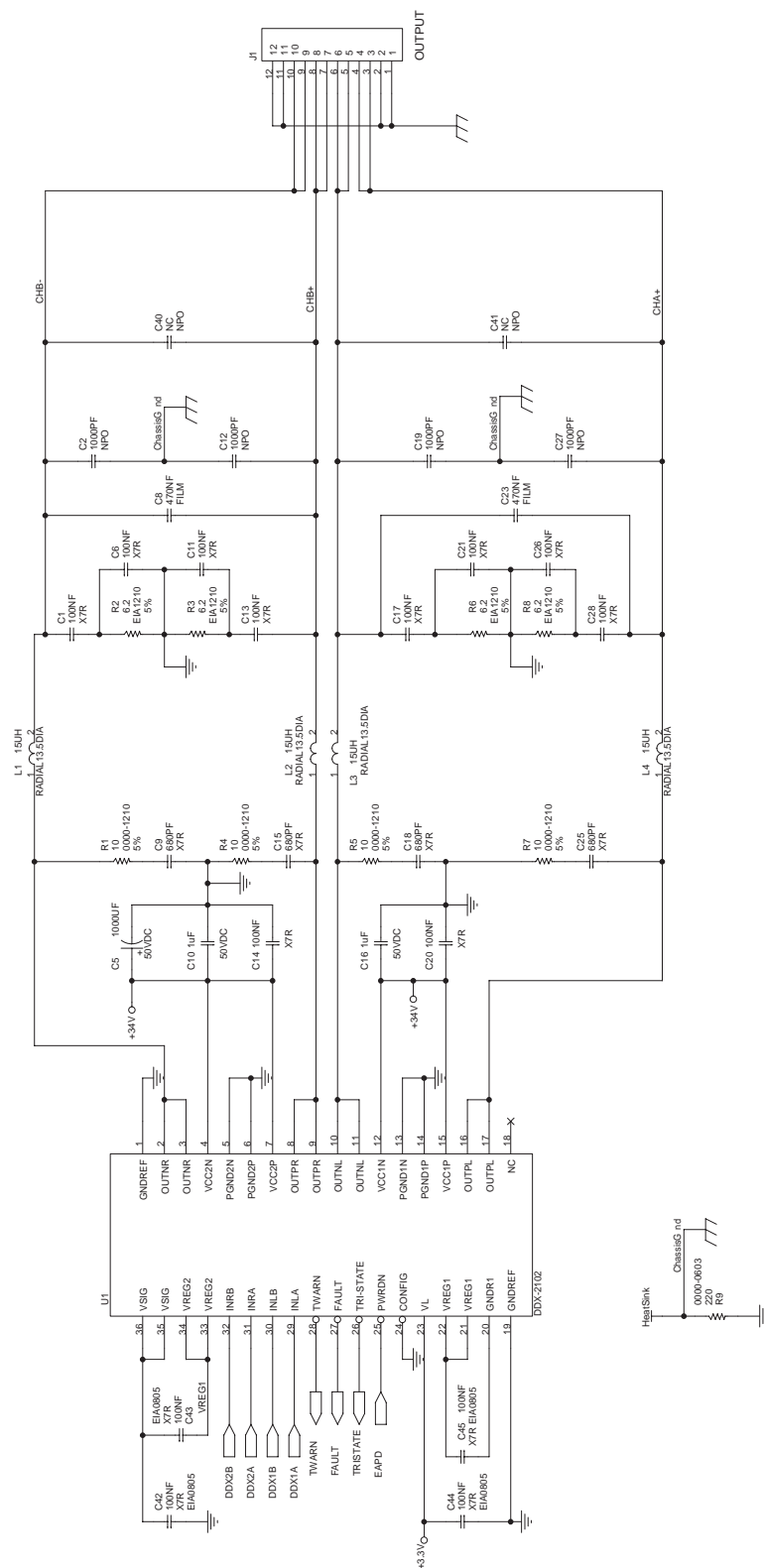




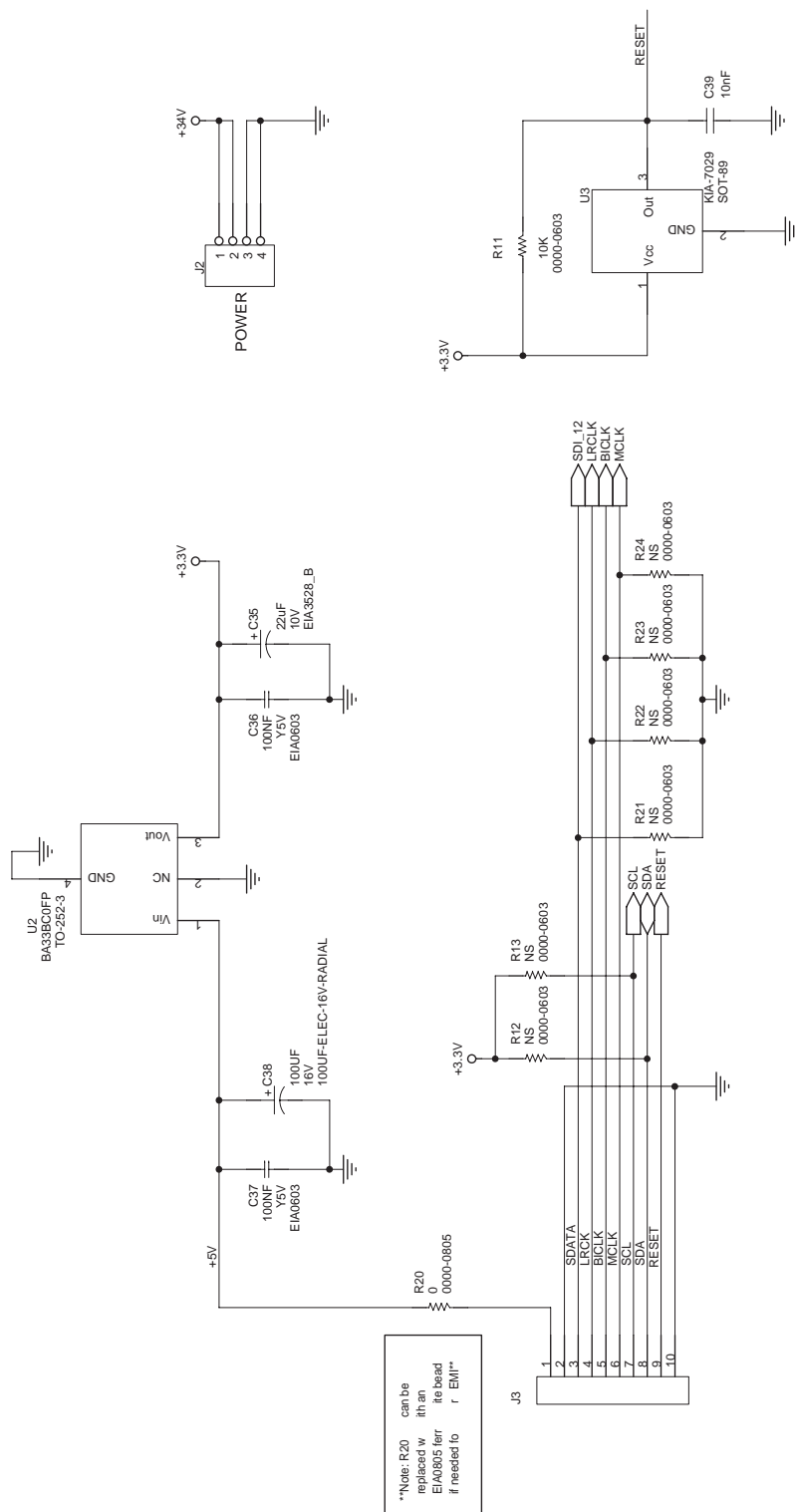
#### 5-2-4. RX MODULE SCHEMATIC DIAGRAM\_3



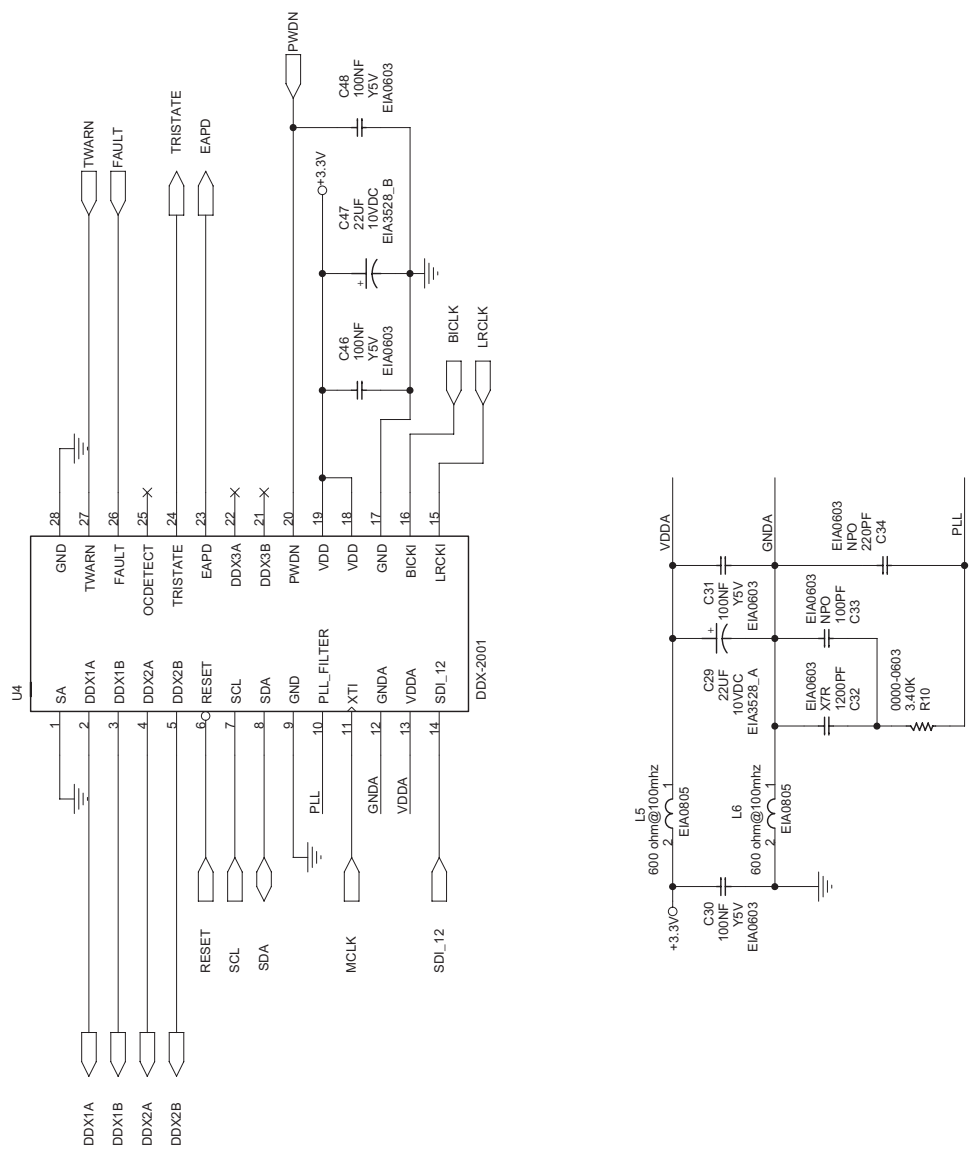
### 5-2-5. RX AMP SCHEMATIC DIAGRAM\_1



5-2-6. RX AMP SCHEMATIC DIAGRAM\_2

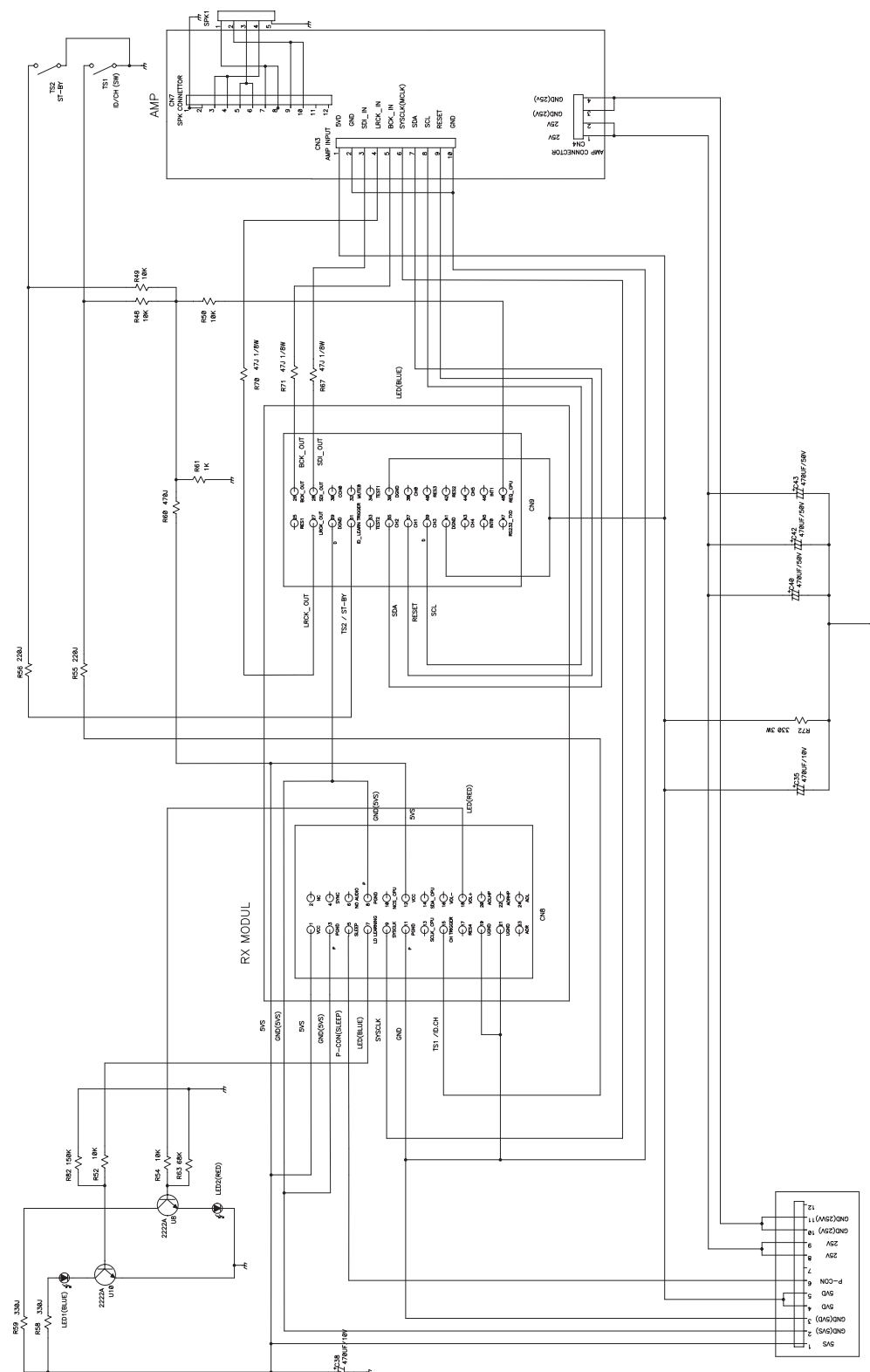


5-2-7. RX AMP SCHEMATIC DIAGRAM\_3

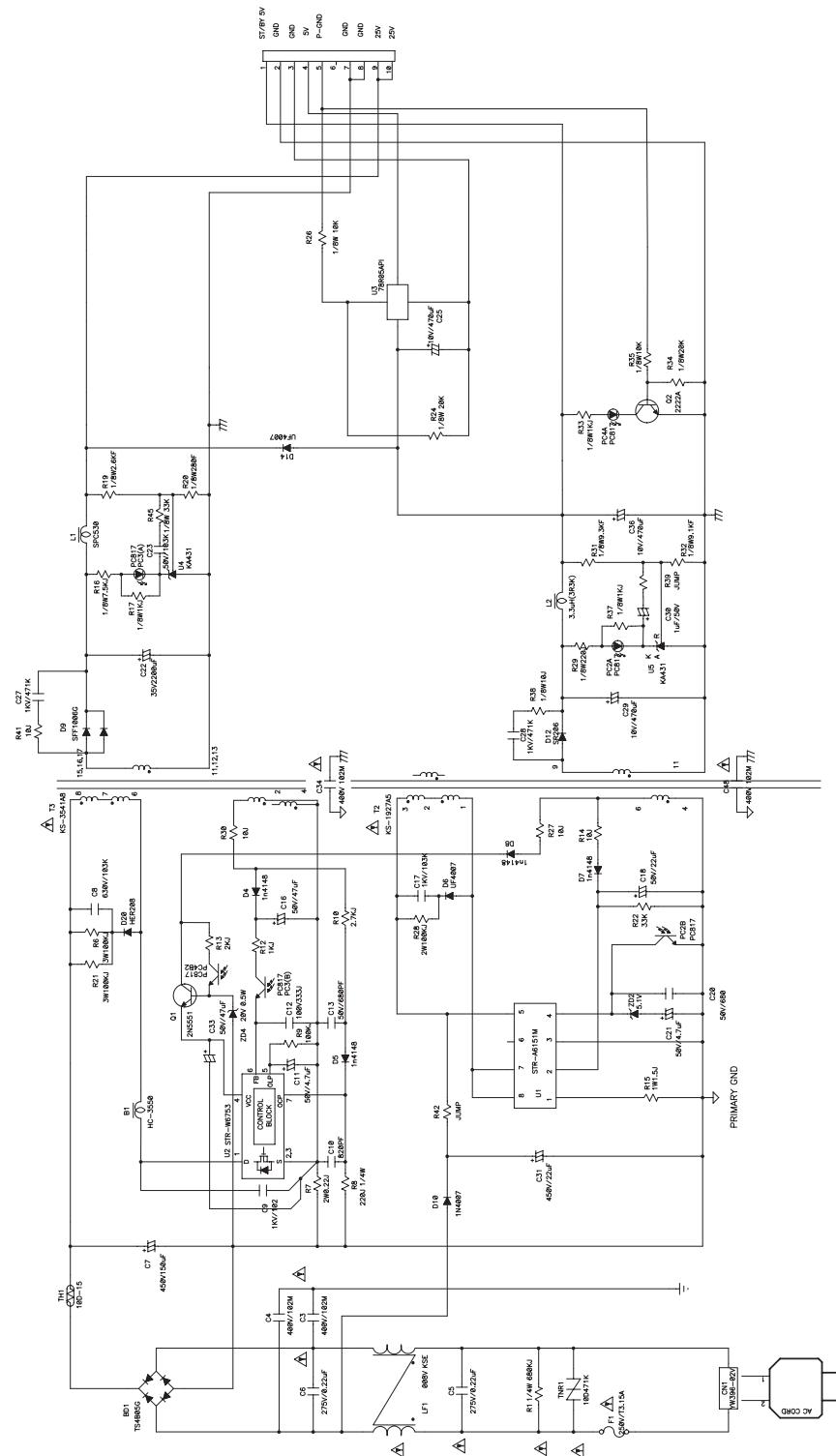




### 5-2-8. RX MODULE + AMP SCHEMATIC DIAGRAM



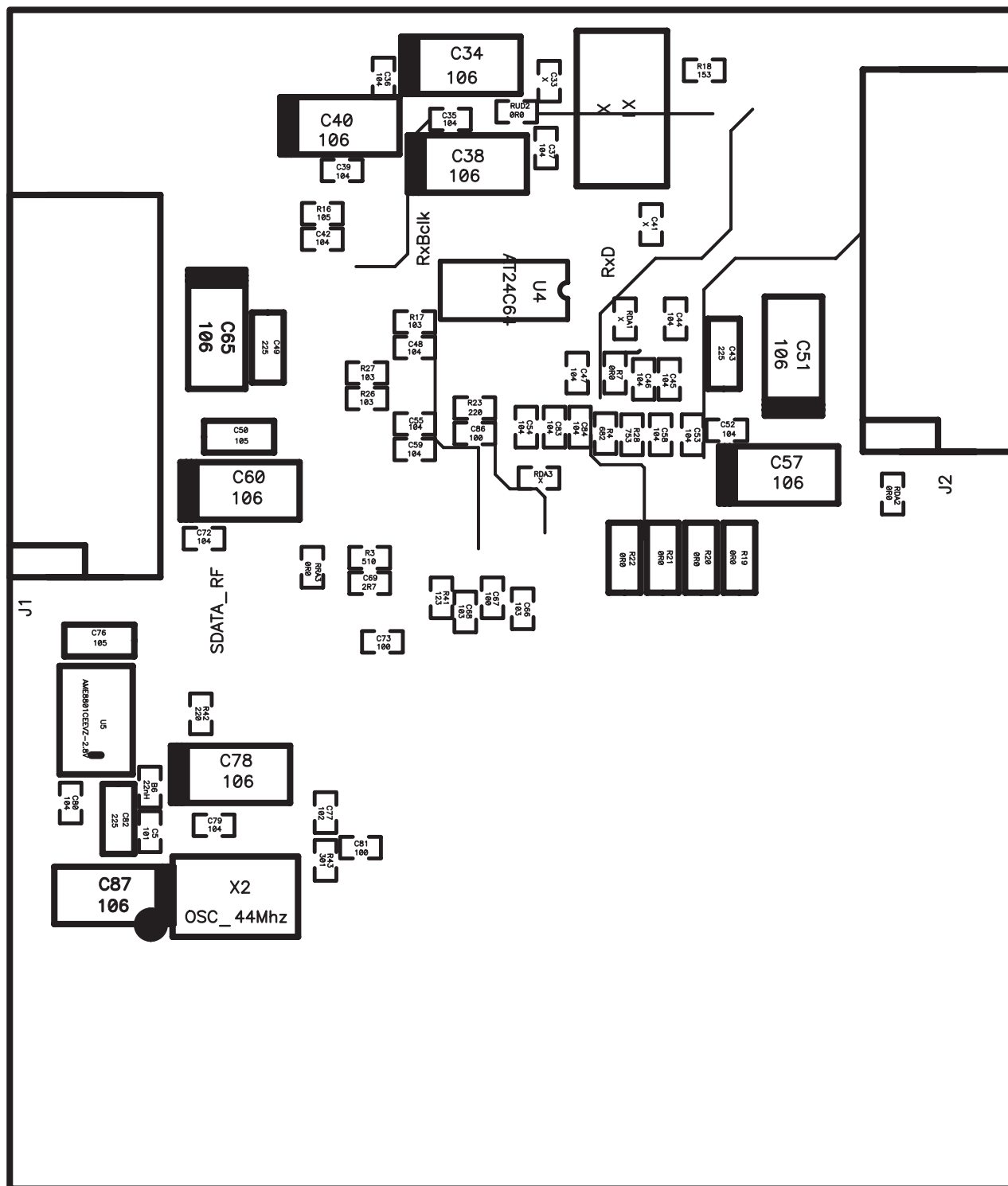
5-2-9. RX SMPS(POWER) SCHEMATIC DIAGRAM



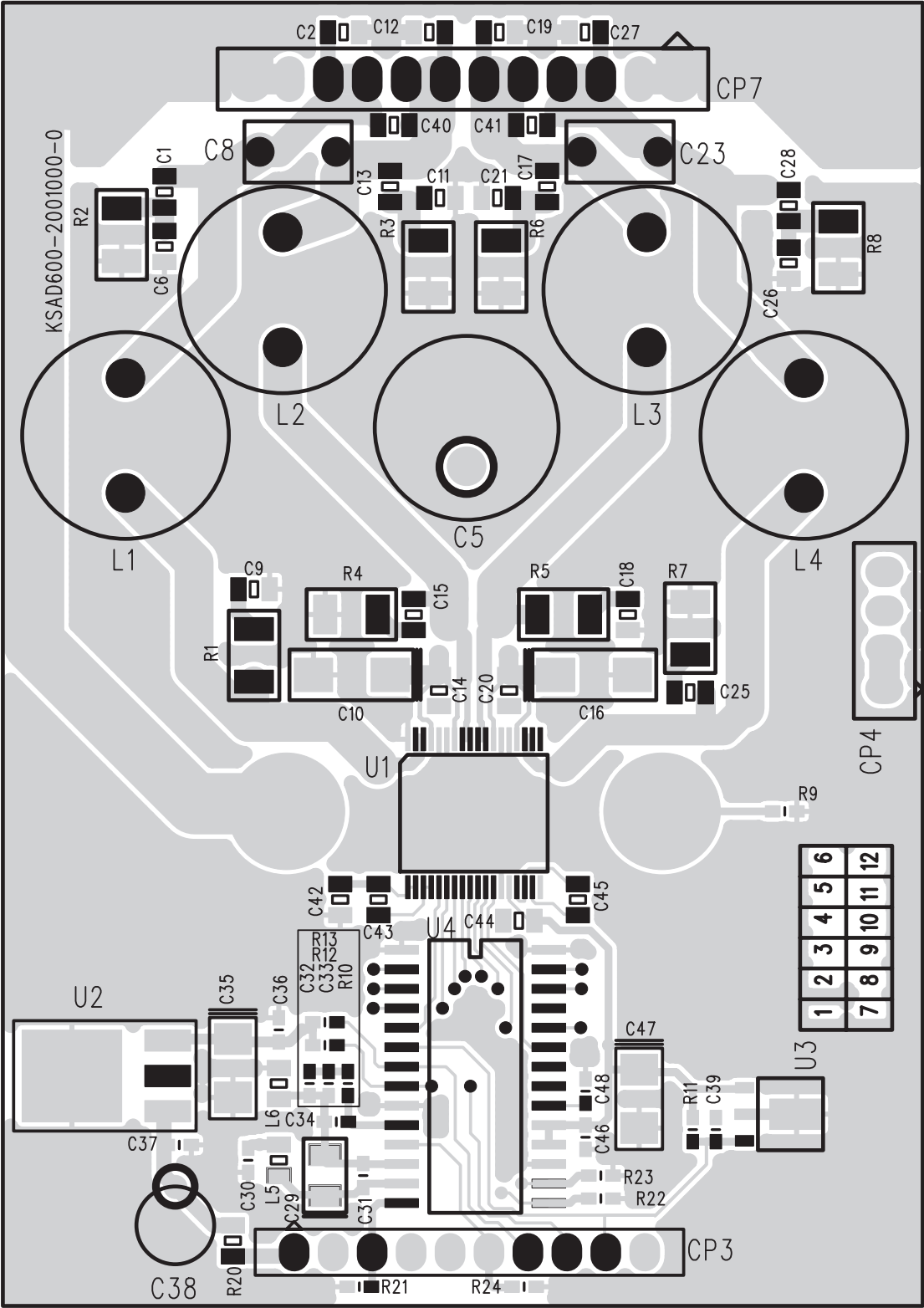
POWER SUPPLY SCHEMATIC DIAGRAM



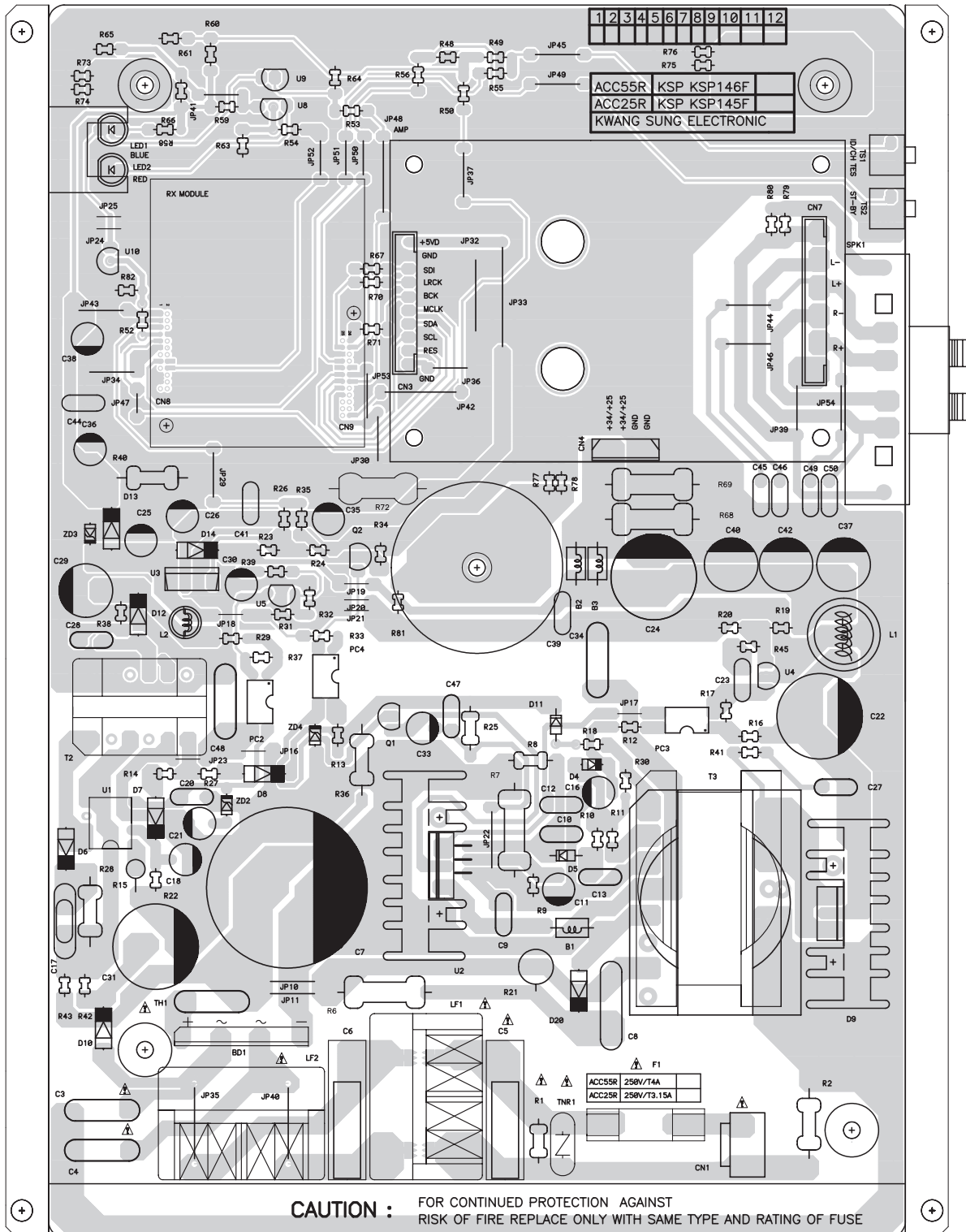
### 5-2-11. RX MODULE PRINTED CIRCUITED DIAGRAM(LOWER SIDE)



5-2-12. AMP PRINTED CIRCUITED DIAGRAM(UPPER SIDE)



## 5-2-14. RX SMPS(POWER) PRINTED CIRCUITED DIAGRAM(COMPONENT SIDE)



# MEMO

Handwriting practice lines consisting of 25 horizontal dotted lines.